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Marshall, William

P L A N T I N G
AND
ORNAMENTAL GARDENING ;
A
PRACTICAL TREATISE.



L O N D O N :
Printed for J. DODSLEY, Pall-Mall.
MDCCCLXXXV.



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THE Intention of this Publication is to bring into one point of view, and arrange in a compendious form, the Art of Planting and Laying-out Plantations: an art which, though in itself a unity, has hitherto been treated of as two distinct subjects. Books upon Planting we have many; and those upon ornamental Gardening are not less numerous; but a Practical Treatise comprehending the entire subject of conducting rural improvements upon the principles of modern taste, has not hitherto appeared in public. This circumstance, however, is the less to be wondered at, as the man of business and the man of taste are rarely united in the same person. There are many Nurserymen who are intimately acquainted with the various methods of propagating trees and shrubs; and many gentlemen whose natural taste, reading, and observation,

observation enable them to form just ideas of rural embellishment ; but where shall we find the Nurseryman who is capable of striking out the great design, or the Gentleman equal to the management of every tree and shrub he may wish to assemble in his collection? To proceed one step farther, where is the Gentleman, or the Nurseryman, who is sufficiently conversant in the after treatment of Woodlands, Hedges, and the more useful Plantations? In fine, where shall we look for the man who in the same person unites the Nurseryman, the Land-Steward, the Ornamentalist, and the Author? We know no such man: the reader therefore must not be disappointed when he finds that, in treating of exotic trees and shrubs, the works of preceding writers have been made use of.

Cook is our first writer on Planting; nevertheless EVELYN has been styled the Father of Planting in England. It is probable that, in the early part of life, Evelyn was a practical planter upon his estate at Wotton in Surrey; but his book was written in the wane of life, at Greenwich, during a long and painful fit
of

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of the gout. His *Sylva* contains many practical rules, valuable, no doubt, in his day, but now superseded by modern practice; and may be said to lie buried in a farrago of traditional tales and learned digressions suited to the age he lived in*. MILLER at length arose among a group of minor planters; and after him the indefatigable HANBURY, whose immense labours are in a manner lost to the Public.

Cook and Evelyn treated professedly of FOREST-TREES, Miller and Hanbury include ORNAMENTALS; but their works, which are voluminous and expensive, also include kitchen-gardening, flower-gardening, the management of green-houses, stoves, &c. &c. the propagation of trees and shrubs, adapted to the open air of this climate, forming only a small portion of their respective publications.

Miller and Hanbury, however, are the only writers who could afford us the required assistance; and we were led to a choice of the latter, as our chief authority, by three prin-

* The first Edition was printed in 1664, having been previously read before the Royal Society in 1662.

cipal

cipal motives:—Hanbury wrote since Miller, and having made ample use of Mr. M.'s book, his work contains in effect the experience of both writers: Miller is in the hands of most gentlemen; Hanbury is known to few; his book, either through a want of method, a want of language, or through an ill-judged plan of publishing on his own account, has never *sold*: and lastly, Miller's botanical arrangement is become obsolete; Hanbury's is agreeable to the Linnean system.

Since Mr. Hanbury's death, the public have been favored with a new and sumptuous edition of Evelyn's *Sylva*; with notes by Dr. Hunter of York, consisting of botanical descriptions, and the modern propagation of such trees as Evelyn has treated of. These notes, however, contain little new information; the descriptions being principally copied from Miller, and the practical directions from Hanbury.

Left unacknowledged assistance, or assistance acknowledged indirectly, should be laid to our charge, it is thought proper in this place to particularize the several parts of this publication which are *written* from those which are *copied*.

The

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THE INTRODUCTORY DISCOURSES, containing the Elements of Planting, and the Outline of the Linnean System, are, as rudiments, entirely new; excepting the quotations from Linneus's work, which quotations are extracted from the Lichfield Translation of *The Systema Vegetabilium* of that great man.

THE ALPHABET OF PLANTS, so far as it relates to TIMBER-TREES, and other NATIVE PLANTS, as well as to some of the more USEFUL EXOTICS, is either wholly our own, or contains such additions as have resulted from our own observation and experience: so far as it relates to ORNAMENTAL EXOTICS, it is entirely HANBURY's; excepting the quotations which are marked, and excepting the GENERAL ARRANGEMENT, which is entirely new. HANBURY has not less than six distinct classes for the plants here treated of, namely, deciduous Forest-Trees, Aquatics, evergreen Forest-Trees, deciduous Trees proper for ornament and shade, evergreen Trees proper for ornament and shade, and hardy climbing Plants. The first three classes are without any subordinate arrangement; in the last three the plants are arranged alphabetically, agreeably
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The articles **TIMBER, HEDGES, and WOODLANDS**, are altogether new *, being drawn from a considerable share of experience, and an extended observation.

The article **GROUND**s is likewise new, if any thing new can be offered on a subject upon which so much has been already written. Taste, however, is a subject upon which all men will think and write differently, even though their sources of information may have been the same. **WHEATLEY, MASON, and NATURE**, with some **EXPERIENCE**, and much **OBSERVATION**, are the principal sources from which this part of our work was drawn : if we add that it was planned, and in part written, among the magnificent scenes of nature in Monmouthshire, Herefordshire, and Gloucestershire, where the rich and the romantic are happily blended, in a manner unparalleled in any other part of the Island, we flatter ourselves no one will be dissatisfied with the *origin* of the *production*, let the Public speak.

* Excepting such extracts and quotations as are marked, and have their respective authorities subjoined.

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to their genera. This want of simplicity in the arrangement renders the work extremely heavy and irksome to refer to ; and is productive of much unnecessary repetition, or of tiresome references from one part of his unwieldy work to another. His botanical synonyms we have wholly thrown aside, as being burdensome, yet uninstruative ; and in their place we have annexed to each Species the trivial or specific name of LINNEUS, which in one word identifies the plant with a greater degree of certainty than a volume of Synonyma. Other retrenchments, and a multiplicity of corrections have taken place : however, where practical knowledge appears to arise incidentally out of our author's own experience, we have cautiously given it in his own words : likewise, where interesting information lies entangled in a singularity of manner, from which it could not well be extricated, we have marked the passages containing it, as literal quotations ;---to distinguish them from others, which, having been written in a manner more properly didactic, or brought to that form by retrenchment or correction, we consider as being

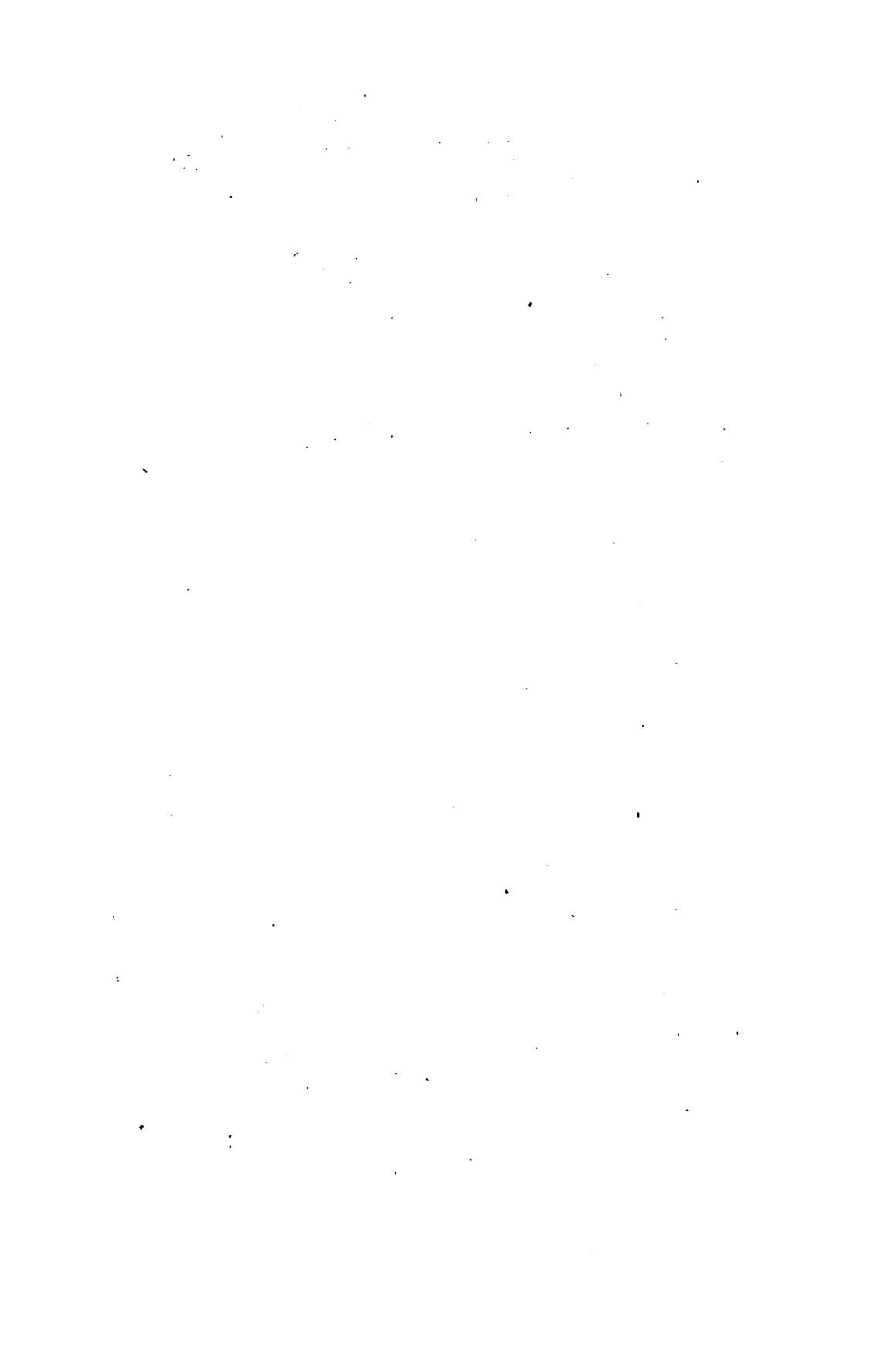
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E R R A T U M.

Page 14. l. 3. *after* them, *read*—the part placed in contact with the soil sends forth roots, whilst that exposed to the open air sends forth branches.

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INTRODUCTION

TO

PLANTING

AND

ORNAMENTAL GARDENING.

GENERAL VIEW.

THE earth produces an almost infinite variety of Plants, possessing various properties, and different degrees of strength and stature. In the vegetable as in the animal world, the stronger subdue the weaker : the herbaceous tribes bow to the shrub, and this to the more robust forest-tree ; and in an unpeopled country a state of woodiness prevails. The interior parts of America are at this day a forest : the Continent of Europe too has still its forest ; and England once was famous for her's.

As inhabitants increase, woodinesses give way to husbandry and the arts ; not merely as incumbrances, but as affording useful materials. Population still increasing, the *forest* breaks into *woods*.

B

Commerce

Commerce and luxury advancing, the canoe becomes a ship, and the cottage a mansion ; at length even the woods dwindle away, and *plantations*, or an *import of foreign timber*, become necessary to supply the want.

England has experienced, more or less, every stage of this decline. Its present state, in respect to timber, we conceive to be this : A few broken forests and many extensive woodlands still remaining ; a great number of plantations of different growths, and a vast supply of foreign timber of various kinds. Indeed, we are of opinion, that had it not been for this foreign supply, scarcely a timber-tree, at this day, would have been left standing upon the island.

Our existence, as a nation, depends upon a full and *certain* supply of shipping ; and this, we may venture to say, upon an *internal* supply of ship-timber. That there is no want of oak-timber at present in this island is, we believe, a fact ; but that the article of *ship-timber* is growing scarce, as we shall explain more fully in its proper place, is, we believe, also a fact which cannot be controverted. This is an important matter, which demands the first attention of Government, and is not unworthy the notice of every landed individual.

Mankind, however, do not view the face of nature in the light of self-preservation only ; the great

Author

Author of creation has wonderfully adapted our senses to the enjoyment of its delights; the eye is gratified by tints of verdure, and the ear by the music of the woods and the mellowness of echo—and both by the voice and majesty of a forest roused by the breath of Nature. Our plan therefore has two objects, UTILITY and ORNAMENT; they are nearly allied, however, as labour and recreation, or as the use and the ornament of dress.

But before we give directions for raising a wood, or ornamenting the face of a country, we must first treat separately of each individual tree and shrub adapted to our purpose; and, preparatory to this, give a comprehensive view of the operations incident to

PROPAGATING,		PLANTING-OUT, and
TRAINING-UP,		TRANSPLANTING.
Trees and Shrubs in general.		

PROPAGATING TREES AND SHRUBS.

TREES and Shrubs are propagated

From SEEDS,	by	LAYERING,
— SUCKERS,	—	BUDDING,
— CUTTINGS,	—	GRAFTING.

But before the young planter put his foot upon the spade, we beg leave to caution him in the strongest terms against a WANT OF SPIRIT. A slo-

venly planter ranks among the most extravagant order of slovens : the labour, the plants, and the ground are thrown away ; besides the consequent disgrace, not only to the individual himself, but to the profession in general. Anxious and interested as we are in the cause of planting, we would rather want pupils than have them pass through our hands *unfinished* : we therefore reject all such as have not industry, spirit, and perseverance, to go through with what they undertake ; and we recommend to such as are possessed of these valuable qualifications, *to begin upon a small scale*, and to let their seminary, their nursery, and their plantations increase with their experience.

Whilst, however, we caution against entering immaturity upon the business of planting, we cannot refrain from mentioning the PLEASURES which result from it. How rational, and to a contemplative mind how delightful, to observe the operations of Nature ;—to trace her in every stage, from the seed to the perfected plant ; and, from beneath the leaf-stalk of this, through the flower-bud, the flower, and the seed-vessel, to the seed again ! Man must be employed ; and how more agreeably than in conversing with Nature, and in seeing the works of his own hands, assisted by her, rising into perfection.

Nor

Nor do we mean to hold out pleasure alone as an inducement to planting;—its PROFITS are great, when properly executed, and this idea adds solidity to the enjoyment. Pleasure alone may satiate; but profit and pleasure united seldom fail of producing a lasting gratification.

There is another incitement to planting, which alone has been generally held out as a sufficient inducement. We are sorry to confess, however, that we know too much of mankind, to believe that PATRIOTISM, unaided by personal interest, will ever produce a supply of ship-timber to this or any other nation. Far be it from us, however fashionable it may be, to speak irreverently of patriotism; we consider it as the noblest attribute of the human mind. Young men, to whom we more particularly address ourselves, are seldom without some share of it; and we flatter ourselves that this virtuous principle, assisted by the pleasure, the profit, and the POPULARITY which attends planting,—ornamental plantations more particularly,—will induce the young men of the present age to study and practise it; not more for themselves than for future generations.

PROPAGATING FROM SEED.—There are four ways of raising from seed the trees and shrubs adapted to our purpose :

In Beds of natural Soil,
In Beds of Compost,
In Pots,—and some few
In Stoves, or under Glasses.

It will be expected, perhaps, before we begin to treat of the different methods of sowing, that we give some directions for GATHERING and preserving seeds. Little, however, can be said upon the subject under this general head; different species requiring a difference in management. We may, nevertheless, venture to say, that all seeds ought to be fully matured upon their native plants; and we may further add, that such as drop spontaneously from the seed-vessel, or are shed by a moderate wind, or other gentle agitation, are preferable to those which are torn from the tree immaturity. The seeds of scarce or valuable plants may be gathered thus: As soon as they begin to fall of themselves, spread a cloth under the plant, and agitate it moderately, until all that are ripe have fallen;—and repeat this whenever a second and a third spontaneous fall takes place.

The art of PRESERVING seeds rests chiefly upon that of *curing* them immediately after gathering. If grass were put into the stack immediately after mowing, or corn threshed out at harvest and laid in heaps, it would presently heat and become entirely spoiled. So it is with the seeds of trees and shrubs :
therefore

therefore they ought, as soon as they are gathered, to be spread thin in an airy place, and be turned as often as a close attention sees necessary. When the superfluous moisture has evaporated, they may be collected into bulk; remembering, however, to run them every now and then down a skreen, or shake them in a sieve, that their brightness and sweetness may be preserved. Some of the larger seeds, acorns especially, are difficult to cure, and require a very strict attention. It must also be remembered, that mice and other vermin are dangerous enemies to seeds. Those which are particularly valuable, may be hung up in bags to the ceiling of a dry room.

In procuring seeds from the shops, or from ABROAD, some caution is necessary. A reputable seedsmen, and a correspondent who is himself a judge of the quality of seeds, are the best general guards against imposition and disappointment.

There are several ways of TRYING THE QUALITY of seeds. The heavier kinds may be proved in water; such as swim are at least doubtful. The lighter sorts may be tried by biting them: if they break abruptly between the teeth, they are generally good; but if they be tough and leathery, they are mostly the contrary. If when crushed, or separated by a knife or scissars, they appear firm, white, and farinaceous, they may generally be esteemed good; but if on the contrary they be spongy and discoloured,

loured, they are generally of a bad quality. But the most certain mode of trial, and that which in cases of suspicion ought never to be omitted, is to *force* a few of them in a garden-pot, placed in an artificial heat, or other warm situation. Put in some certain number, taken promiscuously from the parcel, and, from the proportional number that vegetate, a tolerably just idea may be formed of the quality of the whole. Without this precaution a season may be lost, and the use of the land, together with the labour, be thrown away.

All the natives, and many exotics, may be raised in BEDS OF NATURAL MOULD. The soil should be rich, and sufficiently deep to admit of being trenched or double-dug two spit deep. If it will not bear one spit and a half, namely about fourteen inches, it is improper for feed-beds, and should either be wholly rejected, or (if the substratum is not of too hungry and poisonous a nature) be trenched a spit and a half deep, and the crude mould meliorated by manure and repeated diggings. Autumn is the best time to bring up the substratum, letting it lie in rough trenches all winter to take the frost. In the spring put on a quantity of dung, in proportion to the poverty of the soil; turning it in superficially, and mixing it well with the soil to be improved. Repeat this single digging, through the summer, as often as convenient, or as often as the weeds, which
never

never fail to rise in great abundance from a substratum exposed to the sun and air, require it. In autumn turn up the soil from the bottom, and mix the whole well together. The longer the soil and substratum lie in the state of inversion, the better tempered the fresh mould will become, and the mellowed will be the old cultivated soil. In a manner similar to this, all soils which are not naturally rich ought to be treated. No department of planting calls more loudly for a spirited management than the seminary, which, if not rich and deep by nature, ought to be made so by art, at almost any expence.

In large undertakings a separate seminary may be necessary ; but, in general, a portion of the kitchen garden is better adapted to the purpose. There are indeed two very great advantages in mixing the seminary with the kitchen-garden : the seed-beds are always under the eye, and are more likely to be defended from weeds and vermin there, than in a detached seminary visited only now and then ; and, when the ground has borne a crop of seedling plants, it may be applied to the purpose of culinary herbs ; whilst that which has been long under crops of these may be changed to seed-beds. In whatever situation they are placed, they must be carefully fenced against hares and rabbits, or the labour of a whole season may be cut off in a few nights : in this light also the kitchen-garden has a preference.

It

It would be idle to give particular directions for laying out a SEMINARY, or to say under this general head where this or that seed should be sown. Suffice it therefore to mention here, that SEED-BEDS are generally made from four to four feet and a half wide, with intervals of one foot and a half to two feet. These dimensions render them convenient to be weeded, without the plants being trodden or kneeled upon.

The METHOD OF SOWING is various: By DIBBLING, by DRILLING, and by BROADCAST, which last is the most prevailing method. Seeds sown in the promiscuous broadcast manner are covered either with the rake, or with the spade (or sieve). COVERING WITH THE SPADE (or sieve) is the common practice, and is thus performed: The surface being made light and fine by a recent digging and raking, and the beds formed (operations which every gardener and gardener's man are acquainted with), a thin coat of mould is raked off the beds into the intervals, in proportion to the depth the seeds require to be buried, and according to the nature of the soil, taken jointly. In a light sandy soil, the seeds require to be buried deeper than they do in a strong loam; and whilst an acorn may be covered from one to three inches, the seeds of Larch will not bear more than from a quarter to three-fourths of an inch. The new surface being rendered perfectly fine and level, the seeds are
sown,

PROPAGATION. 11

sown, and in some cases pressed gently into the mould, by patting it with the back of the spade. The earth which was raked off into the interval (or taken off with a spade and placed in little hillocks in it) is now returned ; either by casting it on with the spade, with a kind of sleight which nothing but practice can give, or by sifting it on through a sieve (an operation more easy to the inexperienced, and in many cases preferable) as even and regularly as possible. The intervals cleared, the beds neated up, and if the soil be light, or the seed requires it, their surfaces patted with the back of the spade, so as to give them a kind of polished firmness, the business is finished. DRILLING is performed two ways : By drawing open drills with hoes in the common manner, or by taking off the surface of the beds, drawing lines upon the new surface, laying or scattering the seeds along these lines, and covering them with the spade or sieve, as above directed for broadcast sowing.

The next business of the seminary is to DEFEND the seed and seedling from BIRDS, VERMIN, the WEATHER, and WEEDS. Nets are the best guard against birds, and traps against vermin. As a defence against the scorching heat of the sun, the beds should be hooped, and matts occasionally spread over them, in the manner of a tilt or awning ; but when the scorching abates the matts should be taken off, to give the plants the benefits of the atmosphere ;

atmosphere ; and in dry weather the beds should be kept constantly watered. The awnings are equally safe-guards against spring-frosts, than which nothing is more injurious to seedling plants. In respect to WEEDS, there is a general rule, which ought not to be departed from ; that is, not to suffer them to get too strong before they be drawn ; for, if they be permitted to form large roots, they not only encumber and rob the ground, but in drawing them many seeds or tender seedlings will be drawn out with them. To prevent the young plants from being DRAWN OUT OF THE GROUND BY WINTER-FROSTS, which they are very liable to, especially by a continuance of frost and thaw alternately, coal-ashes may be sifted over them. If this evil has already taken place, and the roots appear exposed above-ground, some fine mould should first be sifted on to cover the roots, and then the ashes sifted over the mould. If the plants be BEATEN OUT OF THE GROUND BY HEAVY RAINS, the remedy is similar.

The length of time between the sowing of the seed and the appearance of the plant is very uncertain : much depends upon the season, and still more upon the nature of the plant itself. Some seeds lie in the ground a whole year before they vegetate, and some two or three years (as will be mentioned under their respective species). During this time the beds should be kept free from weeds and moss ; and, in case of a long continuance of dry weather, should

should be well watered. After very heavy rains, which are liable to run the surface to a batter and wash away part of the soil, it is well to rake the beds slightly, and sift over them a little fresh mould : this prevents the surface from baking, and at once gives a supply of air and nourishment to the embryo plants.

BEDS OF COMPOST are made by mixing drift-sand, or other materials, with the natural soil of the seminary, or with virgin mould taken from a rich meadow or old pasture-ground. But the particular ingredients of a compost depend upon the nature of the plant to be raised ; and the reader is referred to the respective Species in the **ALPHABET OF PLANTS** for further information on this head.

The mode of raising plants in **POTS** and **BOXES** also depends greatly upon the particular plant to be raised. The chief intent of this method is to guard the embryo and seedling plants from the extremes of heat and cold. The pots are filled with compost suited to the plant. For examples, see the articles **ANNONA**, **ARALIA**, **AZALIA**, **MELIA**, **PISTACIA**, &c. &c.

PROPAGATING FROM CUTTINGS.—It is not from seeds alone that plants may be increased ; so great a simplicity prevails in the system of vegetation, that numerous tribes may be propagated from twigs or truncheons cut out of the woody parts

parts of the plants themselves, and stuck naked into the ground without either root or branch upon them : the part in contact with the soil sends forth roots, which, exposed to the open air, send forth branches !

But altho' most of the aquatics, and many other genera of trees and shrubs, may be raised from CUTTINGS planted in common earth and in the open air, there are others which require more care and greater helps. Some require a warm, others a cool border : some must be rooted in pots, others in stoves, or in the green-house. Again, some should be taken from the older branches, others from younger shoots : some require to be planted in autumn, others in the spring. These and other peculiarities of treatment will be specified, when we come to treat separately of each individual.

PROPAGATING FROM SUCKERS.—There is a great similitude between the branches and the roots of plants. If the fibres of some species become exposed to the air, they quit their function of supplying the parent plant with nourishment, and, taking upon them the nature of seedlings, put forth leaves and branches. These rootling plants are called **SUCKERS** ; and if they be split off from the parent root, and planted in a soil and situation suited to their respective natures, they will grow up in the manner of seedling plants.

Various

Various opinions are held respecting the propriety of raising trees and shrubs from suckers : EVELYN and MILLER are against the practice ; saying, that plants raised from suckers are more apt to send up suckers (which are troublesome intruders, especially in ornamental grounds) than those of the same species which have been raised from seeds. HANBURY, however, is of a contrary opinion : he says, “ What might incline people to this notion was, that they have observed trees raised from seeds very long before they produced suckers : but they should consider, that no tree or plant will produce suckers till it is of a suitable size or strength for the purpose, any more than animals can produce young before they are of proper age ; and let them plant a seedling that is grown strong, a layer of the same strength, and one which has been raised from a sucker, exactly of the same size, and with the same number of fibres to the root, and they will find that the seedling or the layer will not be behind-hand with the other in producing suckers, if they have all a like soil and situation ; for it is peculiar to them to sport under the soil in this manner ; and Nature will ever act agreeably to herself, if not stopped in her progress by art.” Nevertheless, in speaking of particular plants, we find him holding forth a different language.

PROPA-

PROPAGATING BY LAYERING.—As the roots of some plants when exposed to the air send forth shoots and branches, so the branches of others, when placed in contact with the earth, send out fibres and roots, which being severed from the parent plant, a separate tree is produced.

LAYERING being an operation by which a great majority of trees and shrubs may be propagated, and by which the many beautiful variegations are principally preserved, we shall here give some general directions for performing it ; reserving, however, the minutiae peculiar to each species until we come to treat of the individual species separately.

LAYERS are bent either from the *stools* of trees and shrubs headed down to a few inches above the surface of the ground, or from *boughs*, plashed so as to bend their tops to the ground ; or from *trees* brought into a stooping posture, by excavating the soil on one side of them, until their heads are lowered into a similar situation.

STOOLS afford the simplest, and are the most common, supply of layers. Where a great number of layers are wanted, plants should be raised for the purpose, and planted in some well-fenced ground, or in some vacant part of the seminary or nursery ; and, when of a proper age and size, headed down to the height of about eight inches for stools. In many cases, trees standing in grounds or woods may
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be cut down, and give a sufficient supply. In whatever situation they are, the earth round them must be double-dug as deep as the foil will allow, and be treated in a manner similar to that of a seed-bed.

The METHOD OF LAYERING is this : Dig a ring-trench round the stool, of a depth suitable to the nature of the plant ; and having pitched upon the shoots to be layered, bend them to the bottom of the trench (either with or without plashing, as may be found most convenient), and there *peg* them fast ; or, putting some mould upon them, *tread* them hard enough to prevent their springing up again ;—fill in the mould ;—place the top of the layer in an upright posture, treading the mould hard behind it ; and cut it carefully off above the first, second, or third eye.

In this simple way a numerous tribe of plants may be layered : there are many, however, which require a more complex treatment. Some will succeed by having a *chip* taken off the under side of the lower bend of the layer, which gives the fibres an opportunity of breaking out with greater freedom : others by having a *cleft* made in that part by thrusting an awl or bodkin through it, keeping the cleft open by a chip or wooden peg ; or by making a longitudinal *slit in the bark* only : others succeed better by *twisting* the part : and others again by *pricking* it, and binding a *wire* round it. But when SIMPLE LAYERING will not succeed, the most pre-

vailing, and in general the most certain method is that of **TONGUE-LAYERING**, which is thus performed: The excavation being made, and the layer chosen and trimmed, ascertain where the lower bend of it will fall, by taking it in the left hand and bending it down to the bottom of the trench ; then placing the thumb of the right hand firmly against the part opposite which the tongue falls, insert the edge of the knife as with an intent to cut the layer off short in that place ; but having cut about half way thro' it, turn the edge of the knife abruptly upwards, drawing it along the pith half an inch, or an inch, according to the size of the layer. The whole stool being treated in this manner, proceed to peg the layers close to the bottom of the trench, bedding the cleft or mouth of each in fine mould for the fibres to strike into. (If the mould and the season be very dry, it is well to moisten some fine mould with soft water, making it into a paste, and wrap the wounded part in a handful of this prepared earth.) This done, level in the mould, draw the point of the layer upright, and shorten it as above directed ; being careful to disturb the wounded part as little as possible. It is a practice with some to trim the stools entirely after layering : we would rather recommend, however, to trim off such shoots only as are too old, or are defective, leaving such as are too young to increase in growth ;
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by which means an annual, instead of a biennial, succession of layers will be had.

The TIME OF LAYERING is generally autumn; spring is favourable to some plants, and midsummer to others; but trees and shrubs in general may be layered at almost any time of the year.

The length of time requisite for ROOTING a layer depends upon the nature of the plant: twelve months is generally considered as a sufficient time, during which the layers should be kept clear from weeds; and when the rooted plants are taken off, the stumps from which they were severed should be cut off close to the stools, in order that they may send forth a future supply of shoots.

BUDDING and GRAFTING are operations more particularly applicable to fruit-trees, and belong to the *kitchen gardener* rather than to the *planter*. They are operations difficult to describe upon paper; and are known to every nurseryman and gardener. The great art in *grafting* lies in uniting the graft closely and firmly with the stock; and, in *budding*, not to leave too much wood, nor yet to pare it off too close to the eye.

TRAINING-UP TREES AND SHRUBS.

TREES and shrubs may be trained up from the seed-bed, &c. until they be fit to be planted out to stand, either in nurseries set apart for the purpose, or in YOUNG PLANTATIONS; which last are frequently the most eligible nurseries, as will be explained hereafter. A SEPARATE NURSERY however is nevertheless necessary; and, in this place, it will be proper to give some general ideas of the soil, situation, and business of a nursery-ground.

The SOIL of the nursery, like that of the seminary, should be rich and deep, and like that also should be prepared, by double-diggings and suitable meliorations: if not deep and rich by nature, it must be made so by art, or be wholly rejected as unfit for the purposes of a nursery-ground. For if the roots of the tender plants have not a soil they affect, or a sufficient room to strike in, there will be little hopes of their furnishing themselves with that ample stock of fibres which is necessary to a good plant, and with which to supply them is the principal use of the nursery.

The SITUATION of the nursery is frequently determined by the soil, and frequently by local conveniencies: the nearer it is to the garden or seminary, the more attendance will probably be given it; but the nearer it lies to the scene of planting, the less carriage will be requisite. In whatever
situation

situation the nursery be placed, it must, like the seminary, be effectually fenced against hares and rabbits.

The BUSINESS OF THE NURSERY consists principally in

PREPARING THE SOIL,	PRUNING,
TRIMMING THE PLANTS,	THINNING,
PUTTING THEM IN,	TAKING-UP, and
KEEPING THEM CLEAN,	PACKING FOR CARRIAGE.

The PREPARATION OF THE SOIL has already been mentioned: too much pains cannot be taken in this department; it is the foundation upon which the success of the whole business greatly depends.

In TRIMMING seedlings, layers and suckers, for the nursery, the ramifications of the roots should not be left too long and sprawling; but (*in this case*) should be trimmed off pretty close, so as to form a snug globular root: by this means the new fibres will be formed immediately round the root of the plant, and may of course be easily removed with it, and without disturbing the earth interwoven amongst them. The tops should in most cases be trimmed quite close up to the leader, or (if awkward or defective) be cut off a little above the root.

In PUTTING-IN seedlings, various methods are practised: by the *dibble*; by the *scoop*; by a single

chop with the *spade*, or by two chops, one across the other : by *square holes* made by four chops of the spade, bringing up the mould with the laft : or by *bedding* ; a method chiefly made use of for quick-fets. If the soil be well-prepared, and the plants properly trimmed, the chief art in putting them in lies in not cramping the fibres of the roots ; but, on the contrary, in letting them lie free and easy among the mould : and the particular mode, or instrument to be made use of, depends much upon the size of the plants to be put in. This also determines, in a great measure, the proper *distance* between the rows and between plant and plant. Strong suckers or layers require larger holes and a greater distance than weak seedling plants. The proposed method of cleaning too is a guide to the distance : the plow cannot work in so narrow a compass as the spade. The natural tendency of the plant itself must also be considered ; so that few general directions can be given under this head. If we say from six to twenty-four inches in the rows, with intervals from one to four feet wide, we shall comprehend the whole variation of distances.

CLEANING THE NURSERY is a business which must not, of all others, be neglected : all plants are enemies to each other. If grass and weeds are suffered to prey upon the soil, the young plants will be deprived of their proper nourishment and moisture : in short, it is necessary that the nursery should
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be kept equally clean as the seminary, and this as clean as the kitchen-garden: it would be more pardonable to suffer the plants to be smothered in the seed-beds than in the nursery quarters; for in that case only a small part of the expence would be thrown away. Nor is merely keeping the weeds under, the only care in a nursery: the intervals must be kept stirred, in order to give air and freedom to the fibres. This may be done either with the spade, which is called turning-in; or, if the intervals be wide enough and the nursery extensive, with the plow, which is attended with much less expence.

The next business of the nursery is PRUNING: this is necessary to prevent the plants from crouding each other, and to give them stem. Shrubs which do not require a stem should not be placed in nursery-rows, but in the quincunx manner, that they may have an equal room to spread on every side; but forest-trees, and trees in general, require some length of stem; and in giving them this, the leading shoot is more particularly to be attended to. If the head be double, one of the shoots must be taken close off: if it be maimed, or other ways defective, it may be well to cut the plant down to the ground and train a fresh shoot; or if the head be taken off smooth, immediately above a strong side-shoot, this will out-grow the crookedness, and in a few years become a straight plant.

The time of the plants remaining in the nursery is determined by a variety of circumstances, and a seasonable THINNING frequently becomes necessary. In this part of the business there are general rules to go by: the shrubby spreading tribes should be thinned whenever their branches begin to interfere; and the stem-plants, whenever their roots get into a similar state. If either the tops of the one, or the roots of the other, be suffered to remain in a state of interference and warfare with each other, the beauty of the shrubs will soon be destroyed, and the thriftiness of the trees will be checked. If the plants be wanted for planting out, it is fortunate; if not, every alternate plant should be moved to a vacant ground prepared for the purpose. If such as stand in rows be removed alternately into the intervals, and set in the quincunx form, a temporary relief will be gained at a small expence.

Planters in general are not aware of the caution necessary in TAKING-UP plants, for the purpose of planting them out to stand. *In this case*, every root and every fibre ought as much as possible to be preserved. No violence should therefore be used in this operation. The best way is to dig a trench by the side of the plant or plants to be taken up; and having undermined the roots let the plant fall of itself, or with a very little assistance, into the trench: if any licentious root or roots still have hold, cut them off with some sharp instrument, so

as to jar the main root as little as may be. If the root was properly trimmed before planting, it will now turn out a globular bundle of earth and fibres, the best characteristic of a well-rooted plant.

When the nursery lies at a distance from the plantations, or when the plants are to be sent to some distant place, much depends upon PACKING them up judiciously. Valuable plants may be packed in pots or baskets;—straw may, however, in general be used, and will equally preserve them from frost in winter and the drought of autumn or spring; especially if, in the latter case, the straw be occasionally moistened with soft water. Large plants should be packed singly with as much earth about the roots as conveniency will allow. If a piece of matt be put over the straw, it will save some trouble in cording, and be more effectual than straw alone.

PLANTING-OUT TREES AND SHRUBS.

ALL that we propose in this place is to convey to our readers some general ideas of

PREPARING THE SOIL, TRIMMING AND SORT- ING THE PLANTS, PLANTING THEM OUT, ATTENDING THEM AF- TER PLANTING,	CLEANING THE PLAN- TATION, PRUNING THE PLANTS, AND THINNING THEM;—
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in order to avoid useless repetitions, when we come to speak separately of each individual species; and to enable such of our readers as are totally unacquainted with the subject, to follow us thro' the ALPHABET OF PLANTS with a degree of ease and satisfaction to themselves, which, without these previous instructions, they would not be able to do.

The PREPARATION OF THE GROUND depends in some measure upon the size of the plants. To speak generally upon the subject,—For plants under four feet high the soil ought to receive a double-digging, or a summer's fallow under the plow, or a crop of turnips well-hoed; but, for larger plants, separate holes dug in the unbroken ground are frequently made use of; though we cannot by any means recommend the practice. Trees and shrubs never thrive better than when they are planted upon *made ground*; for here the fibres rove at large, and the nearer the soil of a plantation is brought to the state of made ground; that is to say, the more it is broken, and the deeper it is dug, the greater probability there will be of success. Plants put in a hole may thrive very well whilst the fibres have loose mould to work in; but, whenever they reach the firm unbroken sides of the hole, they will, except the soil be of a very rich loamy nature indeed, receive a check which they will not overcome

overcome for many years. The size of the holes, whether in broken or unbroken ground, must be in proportion to the roots of the plants to be put in. For large nursery plants the holes in unbroken ground should not be less than two feet deep; and, for plants from four to eight feet high, the holes ought to be made from two to three feet diameter: the different strata should be kept separate; laying the sod on one side of the hole, the corn mould or soil on another, and the substratum on a third; and in this state they should lie some weeks before the time of planting.

This, namely the TIME OF PLANTING, varies with the species of plant, and with the nature of the soil. Plants in general may be set out either in the autumn or in the spring. In a bleak situation the latter is generally preferable; provided the planting be not done too late. The latter end of February, and all March, is a very proper season for most plants: but where the scene of planting is extensive, every fit of open weather, during the six winter months, may be embraced. Some plants, however, are partial to particular seasons: these peculiarities will be mentioned in their proper places.

It has been already intimated, that when trees and shrubs are planted out, finally, their roots should be left UNTRIMMED. It is usual, and may be proper, to take off the bruised and maimed parts;

parts ; but even this should be done with caution. Their *tops*, however, require a different treatment. Forest trees and other stem-plants may in general be trimmed close, by which means the roots will be able to send up a sufficient supply of nourishment and moisture the first year, and thereby preserve the life of the plant : whereas, on the contrary, if a number of side-shoots be left on, the quantity of leaves and shoots becomes so great, that the plant probably is *starved* for want of that necessary supply. This renders the success of shrubby plants uncertain ; and is an argument against their passing through the nursery ; and, of course, in favour of their being moved (when practicable) from the seminary into the place in which they are intended to remain. A well-rooted plant, however, if planted in a good mould and a moist season, will support a considerable top ; and there is a general rule for trimming of plants : Leave them tops proportioned to their roots ; for no doubt the larger the top, provided the root can support it, the quicker progress the plant will make : nevertheless it is well to be on the safer side ; a sure though slow progress is preferable to a dead plant, which is always a reflection upon the planter, and an unsightly incumbrance in the plantation. A judicious planter, whilst he trims his plants, will at the same time sort them : instead of throwing them out of his hand into one heap promiscuously, he

he will lay the weak ill-rooted plants in one place, the middle sort in another, and the strong well-rooted ones in a third; in order that, when they are planted out, each plant may have a fair and equal chance of rising; which, without this precaution, cannot be the case.

We now come to the operation of PLANTING; which is guided in some measure by the species of plantation. If the plants be large and the plantation chiefly ornamental, they ought to be planted out promiscuously in the situation in which they are intended to remain; but if the plants be small, and the plantation chiefly useful, nursery-rows ought generally to be preferred. For in this manner the tender plants give warmth to each other; the transition is less violent than when they are planted out immediately from the nursery or seed-bed singly, and at a distance from each other: the ground is more easily kept clean than where the plants stand in the random manner; besides, the intervals may, whilst the plants are young, be cropped with advantage: whilst the remainder of the intended plantation may be kept in an entire state of cultivation until the plants acquire a considerable size; or, if the whole ground be stocked in this nursery manner, the superfluous plants may in almost any country be sold to great profit. We do not recommend planting these nursery-plantations too thick: four feet between the rows and two feet between
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the plants are convenient distances; or if the intervals be set out exactly a quarter of a rod wide, namely four feet one inch and an half, and the plants be put in at twenty-four inches and three quarters apart, the calculation of how many plants will be required for an acre or any other given portion of ground, or, on the contrary, how much ground will be necessary for a given number of plants, will be made easy and certain. The method of putting in the plants in these nursery-rows is this: The ground being brought to a proper state of cultivation, as directed above, the plants trimmed and sorted, and the rows set out, a line is laid along to make the holes by. To ascertain precisely the center of each hole, a mark is made in the line (or land-chain, which is not liable to be varied in its length by the weather), and a stick or other guide placed where the center of each hole falls. The workmen begin to make the holes by chopping a ring round each stake, with the spade, of a diameter proportioned to the size of the plants, and of a depth equal to that of the cultivated mould. A row of holes being finished, the plants, in this case, may be immediately put in, which is done in this manner: One man, or boy, holds the plant upright with its stem in the center of the hole, at the same time looking along the row to see that it stand in its proper line, whilst another fills in the mould; first spreading the roots and fibres level in
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the bottom of the hole ; being careful not to suffer any of them to lie in a cramping folded state ; but opening them wide, and spreading them abroad in the manner of a bird's foot. Whilst the spade-man is bedding the roots in the finest of the mould, the person who steadies the plant should move it gently up and down, in order to work in the mould more effectually among the fibres ; which done, they should be pressed down gently together with the foot ; and the treading, if the soil be light, should be repeated two or three times, until the hole be filled up level, and the plant firmly fixed at the same depth at which it stood in the place from whence it was taken : if on trial the hole be found too shallow, it must be deepened ; if too deep, some of the roughest of the mould must be thrown to the bottom, until the roots be brought to their own natural level. The row being finished, the planter walks back along it, and adjusts such plants as lean or stand out of the line, whilst his helper distributes the plants of the next row. In a similar manner the plants are put in when the holes are made in whole ground. The fods are generally thrown to the bottom of the hole ; and if these be not sufficient to raise the plant high enough, some of the substratum is mixed with them ; or if this be of a very bad quality, some of the top soil is dug from the intervals and thrown into the hole. The roots are bedded in the best of
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the mould, and the hole rounded up, either with the substratum or with the soil of the interval, so as to form a hillock or swell round the stem of the plant, in order to allow for the settling of the broken mould.

Plantations require a close ATTENDANCE AFTER PLANTING; especially in windy weather. Large plants are generally staked; but this is a practice we do not recommend, except for large transplanted trees or shrubs: but of these in the next chapter. Plants, even of six or eight feet high, if well-rooted and *firmly* planted, will withstand a great deal of weather. The plantation however should frequently be gone over, and such plants as have lost their upright posture, or are loose at the roots, should be righted and *rammed*; especially if the soil be of a light open texture: indeed, in such a soil, it is prudent to ram them at the time of planting, which not only prevents their being misplaced by the winds, but also prevents the drought from reaching the roots so soon as when the mould is left light and porous. In this case, however, it must be remembered, that when the plants have got foot-hold, the mould which has been rammed should be loosened with the spade, in order to admit a full supply of air to the roots, without which no plant can flourish. If a continuance of drought set in after planting, it will be prudent to WATER the plants; not partially, by pouring a small quantity

tity of water against the stem of each ; but in large quantities poured into a ring made near the outside of the hole ; so that the whole mass of broken earth may be thoroughly moistened, without washing off the finer mould from the fibres. A superficial watering tantalizes the plants, and leads the fibres towards the surface for nourishment : the moisture thus partially given soon evaporates, and the disappointed fibres become exposed to the parchings of the sun and wind.

Plantations in rows are best CLEANED with the plow. In the spring gather two furrows, or if room four furrows, into the middle of the interval : in summer split these interval-ridges, throwing the mould to the roots of the plants, to save them from the drought : in autumn gather them again into the interval ; and in winter again return them to the rows to keep out the frost. If the soil be good, and dung can be had, a row of potatoes, cabbages, &c. may be planted in each interval, or turnips sown over the whole : in either case, the inter-spaces of the rows should be kept clean hoed or hand-weeded. To be brief, a plantation of this kind should be considered, whilst young, as a *kitchen-garden*, and ought to be treated accordingly.

As the plants increase in bulk and stature, they will require PRUNING. Much depends upon doing this judiciously. If it has been neglected too long, care must be had not to do too much at once. The

leader is the principal and first object; the side-branches may be afterwards taken off gradually, so as not to wound the plant too much, nor let too much air at once into the plantation. The time of pruning is generally considered to be in autumn or winter, when the sap is down and the leaves off; but for plants which are not liable to *bleed*, we rather recommend midsummer, as shoots taken off at that time are not so apt to be followed by fresh shoots as those taken off in winter. If the shoots be young and slender, it is better to *rub* them off than to cut them off clean with a sharp instrument: boughs and strong shoots however require an instrument, and from young trees they should be taken off as smooth and close to the stem as possible. If a stump be left, it will be some years before it be grown over, and a flaw, if not a decayed place, will be the consequence; but if a shoot, or even a considerable bough of a young growing tree, be taken off level with the bark of the stem, the wound will skin over the first year, and in a year or two more no traces of it will be left. A large bough of an aged full-grown tree requires a different treatment, which will be given under the article **HEDGE-ROW TIMBER**.

Great judgment is required in **THINNING** plantations. The same rule holds good in nursery-plantations as in the nursery itself: and the same general rule (liable no doubt to many exceptions) may
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be extended to woodlands and ornamental plantations. But of these hereafter : suffice it to repeat in this part of our Work, that whenever the roots of plants begin to interfere with each other, their growth from that time is more or less checked ; and whenever their branches are permitted to clash, from that time their beauty and elegance are more or less injured.

TRANSPLANTING TREES AND SHRUBS.

BY this is meant the removal of trees and shrubs, which, having formerly been planted out, have acquired some considerable size. We do not mean to recommend the practice in general terms ; but for thinning a plantation, for removing obstructions, or hiding deformities, or for the purpose of raising ornamental clumps or single trees expeditiously, it may frequently be useful, and is universally practised, though seldom with uniform success. This is indeed the most difficult part of planting, and requires considerable skill—with great care and attention in applying it.

It is in vain to attempt the removal of a tap-rooted plant (as the oak), which has not previously been *tapped* ; that is, its tap-root taken off ; and not less arduous to make a weak-rooted plant of almost any species (the aquatics excepted) succeed

with a large top upon it : much therefore depends upon taking-up and trimming trees and shrubs for transplantation.

Before a tap-rooted plant, which has never been removed from its place of femination, can be taken up with propriety, it must be tapped in this manner : Dig a trench or hole by the side of the plant, large enough to make room to undermine it, in such a manner as to be able to sever the tap ; which done, fill in the mould, and let the plant remain in this state one, two, or three years, according to its size and age. By this time the horizontal roots will have furnished themselves with strength and fibres ; especially those which were lopped in the excavation ; and the plant may be taken up and removed in the same manner as if it had been tapped and transplanted whilst a seedling, though not with equal safety ; for plants which have never been removed have long branching roots, and the *fibres* lie at a distance from the body of the plant ; whilst those which have been taken up and have had their roots trimmed when young are provided with fibres, which, being less remote from the stem, may be taken up with the plant, and conveyed with it to its new situation. This naturally leads to what may perhaps be called a *refinement* in taking up large plants for transplantation ; namely, lopping the whole, or a part of the horizontal roots, twelve months or a longer time before the plant be taken
up ;

up; leaving the downward roots, and (if necessary) part of the horizontal ones, to support the plant until the time of removal *. It would be needless to add, that in taking up plants in general, the greater length of root and the greater number of fibres there is taken up, the more probable will be the success. It is also a circumstance well understood, that too much earth cannot be retained among the fibres.

The plant being thrown down, and the roots disentangled, it is proper, before it be removed from its place, to trim the top, in order that the carriage may be lightened. In doing this, a considerable share of judgment is requisite: to head it down in the pollard manner is very unsightly; and to trim it up to a mere May-pole, or so as to leave only a small broom-like head at the top, is equally destructive of its beauty. The most rational, the most *natural*, and, at the same time, the most elegant, manner of doing this, is to *trim the boughs* in such a manner as to form the head of the plant into a conoid, in resemblance of the natural head of the Lombardy poplar, and of a size proportioned to the *ability of the root*. Whoever was the inventor of this method of trimming the heads of trees, deserves infinite credit: it only wants to be known in order to be approved; and we are happy to see it growing into universal practice.

* In this case the head ought at the same time to be trimmed, and the plant, if exposed, supported.

The mode of carriage rests wholly with the size of the plant : if small, it is best carried by hand, either upon the shoulder, or upon hand-spikes :—if larger, two sledges, one for the root, the other for the head, may be used :—if very large, and the ball of earth heavy, a pair of high timber-wheels, or a timber-carriage, will be found necessary.

The hole must be made wide enough to admit the root of the plant, with a space of a foot at least all round it, for the purpose of filling in the mould with propriety ; so that if the tree was taken up with a root of six feet diameter, the hole must be made of the diameter of eight or nine feet, and of a depth sufficient to admit of the tree's being seated (when the mould is settled) at its natural depth, as also to receive the sods, and other rough unbroken mould, at least a foot thick underneath its root.

The method of planting depends upon the state of the root, and the temperature of the mould and the season. If the root be well furnished with fibres and mould, and the soil be moist from situation, or moistened by the wetness of the season, no artificial preparation is necessary. The bottom of the hole being raised to a proper height, and the tree set upright in the center of it, the mould may be filled in ; being careful to trim it well in amongst the roots, and to bed the fibres smoothly amongst it ; treading every layer firmly, and, with a carpenter's rammer, filling every crevice and vacancy
among

among the roots, so that no soft place nor hollow-
ness remain; and proceed in this manner until
the hole be filled, and a hillock raised round the
plant to allow for its settling. But if the roots be
naked of mould and thin of fibres, and the soil, the
situation, and the season be dry, or if any other
doubt or scruple, with respect to a probability of
success, arise, we recommend in the strongest terms
the following method: The requisite depth of the
hole being ascertained, and its bottom raised to a
proper height, add a considerable quantity of the
finest mould, pour upon it water sufficient to moist-
ten it thoroughly, and work them up together into
a mortar-like consistency: having spaded out a prin-
cipal part of this paste, and laid it in heaps by the
side of the hole, spread the remainder thin over the
bottom, and set the plant upon it: with the other
part of the paste cover up the wounded parts, and
the fibres; and this done, fill in the remainder of
the mould, as above directed. If the transplanta-
tion be done in autumn, it will require nothing far-
ther at that time; but, if made in the spring, wa-
terings will almost immediately be wanted. There-
fore, at once, draw a ring near the outside of the
hole, and in the bottom of its channel make six,
eight, or ten holes, (by means of a spike and beetle)
at equal distances, and of a depth equal to that of
the roots of the plant. These holes will not only
convey water, but air also, to the immediate region

in which they are both indispensibly necessary to the health of the plant. We have been the fuller in our instructions relative to transplanting, as being a process little understood by professional men. Every nursery-man, and almost every kitchen-gardener, can raise, train, and plant out seedling and nursery plants; but the removal of trees seldom occurs in their practice; and we have met with very few men indeed who are equal to the task. The foregoing rules are the result of experience.

Having thus attempted to give our readers a general knowledge of what may be called the manual operations of planting, we will next enter into particulars, and endeavour to complete his skill in the business of the nursery, by treating separately of each respective tree and shrub adapted to the purpose of useful and ornamental planting.

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ALPHABET of PLANTS,
PROPER FOR
USEFUL and ORNAMENTAL PLANTATIONS;
ARRANGED UNDER THE
GENERIC NAMES of LINNEUS:
WITH A
DESCRIPTION,
AND THE
PROPAGATION,
OF EACH SPECIES.

INTRODUCTION.

FOR a Book of Reference the DICTIONARY form is the most convenient. This part of our Work is entirely of that nature; we have therefore adopted an alphabetical arrangement. Our reasons for making use of the Linnean names as the ground-work of this arrangement, are manifold: a great number of the plants here treated of have no English generic name belonging to them; yet it was necessary to that conciseness and simplicity which is the basis of our plan, to arrange them

them agreeably to their respective genera ; because, in general, the individuals of the same genus have similar appearances and similar propensities, which being placed together in one point of view, their description and mode of culture are rendered infinitely more easy and compendious than they could possibly be, if treated of separately under distinct and detached species. Besides, even many of the species now common in our ornamental grounds and shrubberies have not yet had any English name given to them ; and there are many more, whose English names are local and unsettled ; whereas the Linnean names are the same every where, and are known to the whole world *.

We do not mean to enter into the dispute about the Sexual System of Linneus : it is enough for our purpose ~~that~~ it is at present the prevailing system ; and that, being founded in nature, its principles can never be overturned : we are nevertheless so far from thinking it a *perfect* system, that we believe it capable of very great improvement : at present, however, it is our business to take it as we find it ; and for the use of such of our readers as are unacquainted with its principles, it is proper that we should here give its outline.

Every PERFECT FLOWER has four principal parts, which in general are obvious to the naked eye ;

* An alphabet of English names will be given in the general Index to the work.

namely,

namely, the **CALYX**, or outer guard; the **COROLLA**, or coloured leaves; the **STAMINA**; and the **PISTILLUM**. The calyx is evident in the moss-rose, being those elegant rough leaves which inclose the blushing beauties of the flower: it is also conspicuous in the primrose, being that angular tube out of which the more delicate parts of the flower issue. The corolla of the primrose is that yellow ornament which by unbotanical observers is itself considered as the flower. The stamina are conspicuous in most flowers, and are distinguished by the farina or dust with which they are covered. In the primrose they proceed from the inside of the tube of the corolla; and, when matured, form themselves into a circle round the top of the tube. The pistillum, in the primrose, is that delicate white pillar, which, rising from the bottom of the tube of the corolla, shews its flatted top in the middle of the stamina, and in the center of the flower. According to Linneus, the calyx is an expansion of the outer bark; the corolla, of the inner bark; the stamina, of the wood; and the pistillum, of the pith of the plant; and according to his Sexual System, the stamen is the male, and the pistillum the female, part of generation.

Whether this last is or is not a fact in nature, has been the subject of much dispute. But, to the **FLORAL SYSTEM**, it is, we are humbly of opinion, a matter of no great import. The parts themselves,
and

and not their functions, are the basis of the Linnean System; and we are clear in our opinion, that if that great man had considered his System as being, what it in reality is, merely **FLORAL**, without having unfortunately clogged it with the idea of **SEXUAL**, he would have saved himself a host of enemies, and would beyond a doubt have rendered his System infinitely more simple and scientific, and consequently more useful, than it really is. But it is now too late to regret: his System is established; and himself no more. Having however said thus much, it would be unpardonable in us not to add, that whether we consider his genius, his perseverance, or the System he has formed, notwithstanding its imperfections, he died one of the greatest characters the world has known.

The **VEGETABLE KINGDOM** is divided by **LINNEUS** into twenty-four **CLASSES**: these Classes are subdivided into **ORDERS**; the Orders into **GENERA**; the **Genera** into **SPECIES**; and the Species into **VARIETIES**.

His principle of Classification is seen in the following

“ **KEY**

“ KEY OF THE SEXUAL SYSTEM.

MARRIAGES of PLANTS.

Florescence.

PUBLIC MARRIAGES.

Flowers visible to every one.

IN ONE BED.

Husband and wife have the same bed.

All the flowers hermaphrodite : stamens and pistils in the same flower.

WITHOUT AFFINITY.

Husbands not related to each other.

Stamens not joined together in any part.

WITH EQUALITY.

All the males of equal rank.

Stamens have no determinate proportion of length.

- | | |
|-----------------|-------------------|
| 1. ONE MALE. | 7. SEVEN MALES. |
| 2. TWO MALES. | 8. EIGHT MALES. |
| 3. THREE MALES. | 9. NINE MALES. |
| 4. FOUR MALES. | 10. TEN MALES. |
| 5. FIVE MALES. | 11. TWELVE MALES. |
| 6. SIX MALES. | 12. TWENTY MALES. |
| | 13. MANY MALES. |

WITH SUBORDINATION.

Some males above others.

Two stamens are always lower than the others.

- | | |
|-----------------|------------------|
| 14. TWO POWERS. | 15. FOUR POWERS. |
|-----------------|------------------|

WITH AFFINITY.

Husbands related to each other.

Stamens cohere with each other, or with the pistil.

- | | |
|------------------------|------------------------|
| 16. ONE BROTHERHOOD. | 19. CONFEDERATE MALES. |
| 17. TWO BROTHERHOODS. | 20. FEMININE MALES. |
| 18. MANY BROTHERHOODS. | |

IN TWO BEDS.

Husband and wife have separate beds.

Male flowers and female flowers in the same species.

- | | |
|-----------------|-----------------|
| 21. ONE HOUSE. | 23. POLYGAMIES. |
| 22. TWO HOUSES. | |

CLANDESTINE MARRIAGES.

Flowers scarce visible to the naked eye.

24. CLANDESTINE MARRIAGES.”

His CLASSES are :

- I. ONE MALE (*Monandria*.)
One husband in marriage.
One stamen in an hermaphrodite flower.
- II. TWO MALES. (*Diandria*.)
Two husbands in the same marriage.
Two stamens in an hermaphrodite flower.
- III. THREE MALES. (*Triandria*.)
Three husbands in the same marriage.
Three stamens in an hermaphrodite flower.
- IV. FOUR MALES. (*Tetrandria*.)
Four husbands in the same marriage.
Four stamens in the same flower with the fruit.
(If the two nearest stamens are shorter, it is referred to
Class 14.)
- V. FIVE MALES. (*Pentandria*.)
Five husbands in the same marriage.
Five stamens in an hermaphrodite flower.
- VI. SIX MALES. (*Hexandria*.)
Six husbands in the same marriage.
Six stamens in an hermaphrodite flower.
(If the two opposite stamens are shorter, it belongs to
Class 15.)
- VII. SEVEN MALES. (*Heptandria*.)
Seven husbands in the same marriage.
Seven stamens in the same flower with the pistil.
- VIII. EIGHT MALES. (*Octandria*.)
Eight husbands in the same marriage.
Eight stamens in the same flower with the pistil.
- IX. NINE MALES. (*Enneandria*.)
Nine husbands in the same marriage.
Nine stamens in an hermaphrodite flower.
- X. TEN MALES. (*Decandria*.)
Ten husbands in the same marriage.
Ten stamens in an hermaphrodite flower.
- XI. TWELVE MALES. (*Dodecandria*.)
Twelve husbands in the same marriage.
Twelve stamens to nineteen in an hermaphrodite flower.

XII.

XII. TWENTY MALES. (*Icosandria*.)

Generally twenty husbands, often more.

*Stamens inserted on the calyx (not on the receptacle *)*
in an hermaphrodite flower.

XIII. MANY MALES. (*Polyandria*.)

Twenty males or more in the same marriage.

Stamens inserted on the receptacle, from 20 to 1000 in
the same flower with the pistil.

XIV. TWO POWERS. (*Didynamia*.)

Four husbands, two taller than the other two.

Four stamens : of which the two nearest are largest.

XV. FOUR POWERS. (*Tetradynamia*.)

Six husbands, of which four are taller.

Six stamens : of which four are longer, and the two opposite ones shorter.

XVI. ONE BROTHERHOOD. (*Monadelphia*.)

Husbands, like brothers, arise from one base.

Stamens are united by their filaments † into one body.

XVII. TWO BROTHERHOODS. (*Diadelphia*.)

Husbands arise from two bases, as if from two mothers.

Stamens are united by their filaments into two bodies.

XVIII. MANY BROTHERHOODS. (*Polyadelphia*.)

Husbands arise from more than two mothers.

Stamens are united by their filaments into three or more bodies.

XIX. CONFEDERATE MALES. (*Syngenesia*.)

Husbands joined together at the top.

Stamens are connected by the anthers ‡ forming a cylinder
(seldom by the filaments).

XX. FEMININE MALES. (*Gynandria*.)

Husbands and wives growing together.

Stamens are inserted in the pistils (not on the receptacle).

XXI. ONE HOUSE. (*Monoecia*.)

Husbands live with their wives in the same house, but have different beds.

Male flowers and female flowers are on the same plant.

* "The base by which the parts of the fructification are connected."

† The thread or body of the stamen.

‡ The tips or heads of the stamen.

XXII. TWO HOUSES. (*Dioecia*.)

Husbands and wives have different houses.

Male flowers and female flowers are on different plants.

XXIII. POLYGAMIES. (*Polygamia*.)

Husbands live with wives and concubines.

Hermaphrodite flowers, and male ones, or female ones in the same species.

XXIV. CLANDESTINE MARRIAGES. (*Cryptogamia*.)

Nuptials are celebrated privately.

Flowers concealed within the fruit, or in some irregular manner."

His ORDERS are distinguished by different parts of the flowers, according to the Classes. Those of the first thirteen Classes are taken from the number of females or pistils, (reckoning "from the base of the style *; but if there is no "style, the calculation is made from the number "of stigmas" †); as ONE FEMALE (*Monogynia*), TWO FEMALES (*Digynia*), THREE FEMALES, (*Trigynia*), &c. Those of the sixteenth, seventeenth, eighteenth, twentieth, twenty-first, and twenty-second Classes are taken from the number of males, or stamens. Those of the fourteenth are distinguished by SEEDS NAKED (*Gymnospermia*), and SEEDS CLOATHED (*Angiospermia*). Those of the fifteenth, by the formation of the seed-vessel, or pod; as, WITH SILICLE (*Siliculosa*), and, WITH SILIQUE (*Siliquosa*). Those of the twenty-third are ONE HOUSE (*Monoecia*); TWO HOUSES (*Dioecia*); and THREE HOUSES (*Trioecia*). Those of the twen-

* The *shaft* or body of the pistil.

† The *summits* or heads of the pistil.

ty-fourth are FERNS, MOSSES, FLAGS, and FUNGUSES. Those of the nineteenth Class (consisting chiefly of plants with compound discous flowers, as the thistle, dandelion, &c.) are, EQUAL POLYGAMY (*Polygamia Equalis*); SUPERFLUOUS POLYGAMY (*Polygamia Superflua*); FRUSTRANEUS POLYGAMY (*Polygamia Frustranea*); NECESSARY POLYGAMY (*Polygamia Necessaria*); SEPARATE POLYGAMY (*Polygamia Segregata*); MONOGAMY (*Mono-gamia*). The following is Linneus's account (literally as it stands in the Litchfield translation) of the Orders last mentioned.

EQUAL POLYGAMY consists of many marriages with promiscuous intercourse.

That is, *of many florets furnished with stamens and pistils.*

The flowers of these are vulgarly called Flosculous.

SPURIOUS POLYGAMY, where the beds of the married occupy the disk, and those of the concubines the circumference.

That is, *the hermaphrodite florets occupy the disk, and the female florets without stamens surround the border, and thus in three manners :*

- (a) SUPERFLUOUS POLYGAMY, when the married females are fertile, thence the concubines superfluous.

That is, *when the hermaphrodite flowers of the disk are furnished with stigmas, and produce seeds; and the female flowers also, which constitute the circumference, produce seeds likewise.*

- (b) FRUSTRANEUS POLYGAMY, when the married females are fertile, and the concubines barren.

That is, *when the hermaphrodite flowers of the disk are furnished with a stigma, and produce seeds; but the florets which constitute the circumference having no stigma, produce no seeds.*

(c) NECESSARY POLYGAMY, when the married females are barren, and the concubines fertile.

That is, *when the hermaphrodite flowers, from the defect of the stigma of the pistil, produce no seed; but the female flowers in the circumference produce perfect seeds.*

(c) SEPARATE POLYGAMY, when many beds are so united that they constitute one common bed.

That is, *when many flower-bearing calyxes are contained in one common calyx, so as to constitute one flower.*

His GENERA are taken from the construction of the parts of fructification. All plants, whether herbs, shrubs, or trees, whose flowers and seeds correspond as to figure and disposition, are of the same GENUS.

His SPECIES are distinguished by the leaves, and other more permanent parts of the plant. Or, speaking with greater precision, the SPECIES is determined by the nature and property of the seed: for, let the exterior of a plant, or tribe of plants, be what it may, if the seed do not produce near resemblances of the parent stock, but plants whose appearances or properties are different from it (as in the case of apples, pears, &c.); such plants are not considered as forming a distinct SPECIES, but are properly deemed VARIETIES (of some natural species), arising from cultivation, or some fortuitous circumstance.

A L P H A B E T O F P L A N T S.

A C E R.

LINNEAN Class and Order, *Polygamia Monoecia*: Male flowers containing eight stamens, and hermaphrodite flowers containing eight stamens and one pistil, upon the same plant. There are Eleven SPECIES: Ten of which are natives of, or have been introduced into, this country.

1. *ACER Pseudo-platanus*: The SYCAMORE; a tall deciduous tree; native of the continent of Europe, but doubtful whether or not of this island.

2. *ACER Campestre*: The COMMON MAPLE; a low deciduous tree; common in our woods and hedges.

3. *ACER Negundo*: the ASH-LEAVED MAPLE; a deciduous tree; native of Virginia and Carolina.

4. *ACER Platanoides*: the NORWAY MAPLE; a deciduous tree; native of Norway and the north of Europe.

5. *ACER Monspelulanum*: the MONTPELIER MAPLE; a low deciduous tree; growing common about Montpelier.

6. *ACER Creticum*: the CRETAN MAPLE; a low deciduous tree; native of the East.

7. *ACER Rubrum*: the SCARLET MAPLE; a deciduous tree; native of Virginia and Pennsylvania.

8. *ACER Saccharinum*: the SUGAR MAPLE; a deciduous tree; native of Pennsylvania.

9. *ACER Tartaricum*: the TARTARIAN MAPLE; a low deciduous tree; native of Tartary.

10. *ACER Pennsylvanicum*: the PENNSYLVANIAN MAPLE; or the MOUNTAIN MAPLE; a tall deciduous shrub; native of Pennsylvania.

1. The SYCAMORE. This tree grows to a great height and ample size, throwing out a wide-spreading top. Its leaves are vine-shaped; and, on their first appearance, are of a pleasant green; but their beauty soon goes off, being liable to be perforated and disfigured by insects during the summer months, which reduces the value of the Sycamore as an *ornamental*: it has however, long been considered as a *timber-tree* in this country, having been much used by the turners for wooden bowls, dishes, trenchers, &c.; but, since the custom of using earthen ware has become so prevalent, its value for this purpose is greatly decreased. Nevertheless, near the sea-coast it may be planted with advantage, as it is known to withstand the attacks of the sea-air with peculiar hardiness. HANBURY says, The Sycamore being wounded exudes a great quantity of liquor, of which is made good wine. There are two *Varieties* of the Sycamore: one with broad leaves and large keys; the other with variegated leaves.

The PROPAGATION of the Sycamore is very easy. In the autumn, when the keys are ripe, they may be gathered, and in a few days after sown, about an inch and an half deep, in beds of common mould. In the spring the plants will appear, and make a shoot about a foot and a half by the autumn following, if the ground of the seminary be tolerably good, and they are kept clean from weeds. The spring after they come up, they should be planted in the nursery, in rows two feet and a half asunder, and their distance in the rows must be one foot and an half. Here they may remain till they are big enough to plant out finally, with no farther trouble than taking off unfightly side-branches, and such as have a tendency to make the tree forked, except digging between the rows, which must always be done every winter. This tree will grow upon almost any soil.

2. The COMMON MAPLE is too well known to need a description. It is of much humbler growth than the Sycamore; and is by no means ornamental; nor is its timber of a good quality, being peculiarly brittle: The texture however is close and firm, and it is in good esteem amongst the turners. In the vale of Gloucester, where oak timber is scarce, Maple is used for gate-stuff and other purposes of husbandry; and sometimes screws for cyder-presses are made of this wood. But the principal value of the Maple, is for *underwood*: it is of quick growth, and affords good fuel.

The

The method of PROPAGATION is the same as that of the Sycamore ; and, like it, the Maple will grow in almost any soil and situation.

3. The ASH-LEAVED MAPLE grows to a large timber-tree : its leaves are of a pale green, and well adapted to give variety of tint ; but HANBURY says, this tree is not proper to be planted in exposed situations, the branches being subject to be split off by the winds. Its uses are similar to those of the Sycamore.

It may be PROPAGATED from the keys, which are perfected in this country ; or by layering ; or from cuttings, planted in a moist situation, in autumn.

4. The NORWAY MAPLE. This also grows to a large timber-tree. Its leaves are of a shining green colour, and are as large or larger than those of the Sycamore ; their edges are acutely and more beautifully indented ; they are not so liable to be eaten by insects in the summer ; and “ in the autumn they die to a golden yellow colour, which causes a delightful effect at that season, when the different tints of the decaying vegetable world are displayed.” The flowers are also beautiful ; they come out early in the spring, are of a fine yellow colour, and shew themselves to advantage before the leaves come out. They are frequently succeeded by keys, which sometimes arrive at maturity in this climate. There is a *Variety* with striped leaves.

The Norway Maple may be PROPAGATED from seed, as the Sycamore ; it may also be raised by layers, and cuttings, planted in a moist soil.

5. MONTPELIER MAPLE grows to about twenty feet high, and is a very beautiful tree. The leaves are composed of three lobes, are of a shining green, a thickish substance, and retain their verdure later in the year than most of the other sorts. The flowers come out in the spring, but have very little beauty ; their blow is soon over, and sometimes they are succeeded by seeds, which come to perfection in our gardens.

6. CRETAN MAPLE. This grows to about the height of the former. The leaves are downy, composed of three lobes, and grow opposite to each other on long downy footstalks. The flowers come out in the spring, are inconsiderable to the florist, and are very seldom succeeded by good seeds in England.

7. SCARLET-FLOWERING MAPLE. Of this there are two sorts; called, 1. *Virginian scarlet-flowering Maple*; and, 2. *Sir Charles Wager's Maple*. Both of these are propagated for the sake of the flowers, which are of a scarlet colour, and come out early in the spring. The leaves are composed each of five sharp-pointed lobes, which are slightly indented or serrated: They are smooth, of a pale green on their upper surface, glaucous * underneath; and they grow on long, simple, taper, reddish footstalks. The flowers come out in clusters from the side of the branches. They appear in April, and the seeds ripen in June. The sort called *Sir Charles Wager's* produces larger clusters of flowers than the others; on which account it is in most esteem.

8. SUGAR MAPLE is a large-growing tree; will arrive at the height of forty feet; and has broad thin leaves, divided into five principal parts; which are again indented or cut at the edges into several acute segments. Their surface is smooth, of a light green colour, whitish underneath; and they grow on pretty long footstalks. The flowers come out in the spring, about the time of the Norway Maple; and they are succeeded by long keys, which sometimes ripen in England. In America, the inhabitants tap this tree in the spring, boil the liquor, and the fœces afford a useful sugar. The Sycamore, the Ash-leaved and the Norway Maples also abound with a saccharine juice, from which there is no doubt but a useful sugar might be prepared.

9. TARTARIAN MAPLE will grow to upwards of twenty feet high. The leaves are heart-shaped, undivided, and their edges are unequally serrated. The flowers come out from the wings of the leaves, in longish bunches; they appear early in the spring; and sometimes are succeeded by ripe seeds in our gardens.

10. MOUNTAIN MAPLE. The *stalks* of this shrub are slender, covered with a whitish bark, send forth several red branches, and grow about fifteen feet high. The leaves are three-lobed, pointed, and are unequally and sharply serrated. The flowers come out in longish bunches, in the spring: They are of a greenish yellow colour; and are succeeded by seeds which (like those of the Norway Maple) generally fall off before they are ripe.

These sorts are all PROPAGATED, 1. by the seeds; but as they

* *Glaucous*, of a sea green colour.

do not always ripen in this country, the best way will be to procure them from the places where they naturally grow. A cool shady part of the seminary should be appropriated for the purpose; the mould should be made fine; beds should be marked out four feet wide, and in length proportionable to the quantity; and in these the seeds should be regularly sown, sifting over them about half an inch of the finest mould. When the plants come up, they must be kept clean from weeds, and frequently watered; and this work must be duly attended to all summer. The spring following, the strongest may be drawn out, and planted in the nursery, in rows two feet asunder, and at the distance of a foot from each other in the rows; leaving the others in the seminary to gain strength. The spring following they also must receive the same culture; and in the nursery they may remain, with no other trouble than keeping the ground clean from weeds in the summer, digging between the rows in the winter, and taking off all strong and irregular side-shoots, till they are planted out. Trees raised from seeds will grow faster, and arrive at greater height, than those raised from layers; but they will not produce such quantities of flowers; which makes the latter method more eligible for those who want these plants for a low shrubbery.

2. By layers all the species of this genus are to be propagated; though it is never practised for the Common Maple and the Sycamore. The young shoots may be at any time laid down in the autumn, winter, or early in the spring. By the autumn following, they will have struck root, and become good plants; when the strongest may be set out in the places where they are to remain; whilst the weakest may be planted in the nursery, like the seedlings, for a year or two, to gain strength.

3. By cuttings also these trees are to be propagated: But this method is chiefly practised on the Ash-leaved and Norway Maples, which more readily take root this way. The cuttings should be the bottom parts of the last year's shoots: They should be taken off early in October, and planted in rows in a moist shady place. The spring and summer following, they must be duly watered as often as dry weather makes it necessary, and be kept clean from weeds. By the autumn they will be fit to remove into the nursery; though if the cuttings are not planted too close, they may remain in their situation for a year or two longer, and then be set out finally, without the trouble of being previously planted in the

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nursery.

nursery. 4. By budding, grafting, and inarching likewise Maples are to be propagated : But the other methods being more eligible, these are never practised, except for the variegated sorts and the large broad-leaved kind. The latter is to be continued no otherwise than by budding it on stocks of the common Sycamore ; for the seeds, though so large themselves, when sown afford you only the common Sycamore in return.

Seeds of the variegated kinds, however, when sown will produce variegated plants in return ; which renders the propagation of these sorts very expeditious, where plenty of seeds may be had. Where these are not to be obtained, in order to propagate these varieties by budding, let some plants of the common Sycamore, one year old, be taken out of the seminary, and set in the nursery in rows a yard asunder, and the plants about a foot and a half distance from each other in the rows : Let the ground be kept clean from weeds all summer, and be dug, or, as the gardeners call it, *turned in*, in the winter ; and the summer following the stocks will be of a proper size to receive the buds, which should be taken from the most beautifully-striped branches. The best time for this work is August ; because if it is done earlier, the buds will shoot the same summer ; and when this happens, a hard winter will infallibly kill them. Having, therefore, budded your stocks the middle or latter end of August, with the eyes or buds fronting the north, early in October take off the bass matting, which before this time will have confined the bark and pinched the bud, but not so as to hurt it much. Then cut off the stock just above the bud, and dig the ground between the rows. The summer following, keep the ground clean from weeds ; cut off all natural side-buds from the stock as they come out ; and by autumn, if the land is good, your buds will have shot forth, and formed themselves into trees five or six feet high. They may be then removed into the places where they are designed to remain ; or a few of them only may be drawn out, leaving the others to be trained up for larger standards, to serve for planting out in open places, or such other purposes as shall be wanting.

The Striped Norway Maple should be budded on stocks of its own kind ; for on these they take best, and both kinds are not very liable to run away from their colours. Variegated plants in general must be planted in poor, hungry, gravelly, or sandy soils, to feed the disease which occasions these beautiful stripes,
and

and cause it to be more powerful. But these trees shew their stripes in greater perfection in a good soil: The plant, though in sickness, has the appearance of health; the shoots are vigorous and strong; the leaves are large, less liable to be hurt by insects; and the stripes appear more perfect, natural, and delightful, than those on stunted trees growing on a poor soil.

Æ S C U L U S.

LINNEAN Class and Order, *Heptandria Monogynia*: Each flower contains seven or eight males and one female*: There are only two species:

1. *ÆSCULUS Hippo-castanum*: The HORSE-CHESNUT; a *deciduous tree*; native of Asia.

2. *ÆSCULUS Pavia*: The SCARLET ESCULUS, or SCARLET-FLOWERING HORSE-CHESNUT; a *tall deciduous shrub*; native of Carolina, the Brazils, and several parts of the East.

1. HORSE-CHESNUT. This is a large noble-looking tree; growing to seventy or eighty feet high, and throwing out its branches to a considerable width; yet forming a close thickset head; which, if left to nature, takes a most beautifully-striking parabolic form. Its leaves are large, palmated, and of a dark-green colour: they appear very early in the spring; their buds sometimes beginning to swell so early as Christmas, and anticipate the pleasures of the coming spring. Its flowers are singularly beautiful, standing in large spikes thick among the leaves. This tree is peculiar in a quick formation of its shoots, which are frequently perfected in less than three weeks from the time of foliation; "in which time," says MILLER, "I have measured shoots a foot and a half long with their leaves fully expanded." For single trees the Horse-Chesnut stands, amongst the *ornamental* tribe, next to the oak; and in the spring of the year, when its flowers are out, we know no tree equal to it in

* The *Æsculus* is one of the defective genera of Linnaeus. The *Pavia* having eight males in each flower, belongs properly to the eighth Class.

grandeur. It is improper however to be planted near gardens or kept walks, as it sheds its leaves early in autumn, and, being large and numerous, they create a disagreeable litter. The *uses* of the Esculus are few: its timber is of an inferior kind, and its fruit of no great estimation: deer are said to affect it much; and MILLER says, "in Turkey the nuts of this tree are ground and mixed with the provender for their horses, especially those which are troubled with coughs or are broken-winded, in both which disorders they are accounted very good." HANBURY tells us, that swine will fatten upon them; but does not say how they are to be prepared. We have known them offered to hogs raw, also boiled, as likewise baked in an oven, but without success.

The Horse-Chestnut is PROPAGATED from the nuts: In autumn, therefore, when they fall, a sufficient quantity should be gathered. These should be sown soon afterwards in drills, about two inches asunder. If the nuts are kept till spring, many of them will be faulty; but where the seminary-ground cannot be got ready before, and they are kept so long, it may be proper to put them in water, to try their goodness: The good nuts will sink, whilst those which are faulty will swim; so that by proving them this way you may be sure of good nuts, and have more promising hopes of a crop. In the spring the plants will come up; and when they have stood one year they may be taken up, their tap-roots shortened, and afterwards planted in the nursery. When they are of sufficient size to be planted out finally, they must be taken out of the nursery with care, the great side-shoots and the bruised parts of the roots should be taken off, and then planted in large holes level with the surface of the ground, at the top of their roots; the fibres being all spread and lapped in the fine mould, and the turf also worked to the bottom. A stake should be placed to keep them safe from the winds, and they must be fenced from the cattle till they are of a sufficient size to defend themselves. The best season for all this work is October. After the trees are planted, neither knife nor hatchet should come near them; but they should be left to Nature to form their beautiful parabolic heads, and assume their utmost beauty.

The Horse-Chestnut, like most other trees, delights most in good fat land; but it will grow exceedingly well on clayey and marley grounds.

MILLER,

MILLER says, "when these trees are transplanted their roots should be preserved as entire as possible, for they do not succeed well when torn or cut; nor should any of the branches be shortened, for there is scarce any tree which will not bear amputation better than this; so that when any branches are by accident broken, they should be cut off close to the stem, that the wound may heal over."

2. THE SCARLET ESCULUS grows to about fifteen or sixteen feet high; and there is a delicacy in this tree that makes it desirable. The bark of the young shoots is quite smooth, and the growing shoots in summer are of a reddish hue. The leaves are palmated, being pretty much like those of the Horse-Chestnut, only much smaller, and the indentures at the edges are deeper and more acute. The lobes of which they are composed are spear-shaped; they are five in number, are united at their base, and stand on a long red footstalk. The leaves grow opposite by pairs on the branches, which are spread abroad on every side. The flowers come out from the ends of the branches. The first appearance of the buds is in May; though they will not be in full blow till the middle of June. They are of a bright red colour, and consequently have a pleasing effect among the vast tribe of yellow-flowering sorts which shew themselves in bloom at that season. They continue in succession for upwards of six weeks; and sometimes are succeeded by ripe seeds in our gardens.

There are two ways of PROPAGATING this tree; 1. By budding it upon the young plants of the Horse-Chestnut. These stocks should be raised as was directed in that article. They should be planted in the nursery way, a foot asunder, and two feet distant in the rows, which should be kept clean of weeds, and must be dug between every winter till the operation is to be performed. After they have stood in the nursery-ground about two years, and have made at least one good summer's shoot, the summer following is the time for the operation. Then, having your cuttings ready soon after midsummer, the evenings and cloudy weather should be made choice of for the work. Whoever has a great number of trees to inoculate, must regard no weather; but keep working on, to get his business over before the season ends; and indeed, a good hand will be always pretty sure of success, be the weather what it will. If the stocks were healthy, the summer following

following they will make pretty good shoots; and in a year or two after that will flower. This is one method of propagating this tree; and those plants that are propagated this way will grow to a larger size than those raised immediately from seeds.

2. This tree also may be propagated by seeds; which will sometimes ripen with us, and may be obtained out of our own gardens. The manner of raising them this way is as follows: Let a warm border be prepared; and if it is not naturally sandy, let drift sand be mixed with the soil; and in this border let the seeds be sown in the month of March, about half an inch deep. After this, constant weeding must be observed; and when the plants are come up, if they could be shaded in the heat of the day, it would be much better. These, with now and then a gentle watering in a dry season, will be all the precautions they will require the first summer. The winter following, if the situation is not extremely well sheltered, protection must be given them from the hard black frosts, which will otherwise often destroy them: So that it will be the safest way to have the bed hooped, to cover them with mats in such weather, if the situation is not well defended: if it is, this trouble may be saved; for, even when young, they are tolerably hardy. In about two or three years they may be removed into the nursery, or planted where they are to remain, and they will flower in three or four years after. The usual nursery care must be taken of them when planted in that way; and the best time for planting them there, or where they are to remain, is October; though they will grow exceeding well if removed in any of the winter months; but, if planted late in the spring, they will require more watering, as the ground will not be so regularly settled to the roots, as if they had been planted earlier.

A M O R P H A.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female; the males being connected at the base in two divisions: There is only one known SPECIES:

AMORPHA

AMORPHA Fruticosa: BASTARD INDIGO; a *deciduous shrub*; native of Carolina.

THE AMORPHA has its beauties; but it has other ill effects to detract from its value. The leaves are late in the spring before their foliage is fully displayed. The ends of their branches are generally destroyed by the frost; or, if they recover it, they have the appearance of being dead; whilst other plants testify their effects of the reviving months. But notwithstanding these defects, this tree has some other good properties that in part make amends for them. The leaves, when out, which will not be before the middle of May, are admired by all: They are of a pleasant green colour; are very large, beautifully pinnated, the folioles being arranged along the stalk by pairs, and terminate by an odd one. The flowers are of a purple colour, and shew themselves in perfection with us the beginning of July. They grow in spikes, seven or eight inches long, at the ends of the branches, and are of a singular structure. In order to make this tree have its best effect, it should be planted among others of its own growth, in a well-sheltered situation; by which means the ends will not be so liable to be destroyed by the winter's frosts; the branches will not suffer by the violence of the winds; and as it is subject to put out many branches near the root, these indelicacies and imperfections will be concealed; whilst the tree will shew itself to the utmost advantage when in blow, by elevating its purple spiked flowers amongst the others in a pleasing view.

This tree may be PROPAGATED two ways; first, by seeds, which must be procured from America, where the plant is a native; for they do not ripen with us in England. We generally receive the seeds from thence in February: and they should be committed to the ground as soon after as possible. They will grow in almost any soil that is tolerably good; though the more sandy it be, it will be the better. After they are come up, they should have the usual care of seedlings for a year or two, and then be planted, either where they are intended to remain, or else in the nursery, where they will in a year or two make strong plants. This tree may be also propagated by layers; and this operation I would have performed the latter end of summer, whilst the sap is in motion; for if it is deferred until winter, the
branches

branches are then so exceedingly brittle, that it will be with difficulty they are brought down, without breaking, a proper depth into the earth: Let the utmost care be taken, or many of the young branches that would have made layers will be lost. In summer, then, let the branches be brought down while they are pliable; and by the autumn twelve-months after they will have taken root, and be fit to remove.

A M Y G D A L U S.

LINNEAN Class and Order, *Icosandria Monogynia*: Each flower contains about twenty males and one female: There are four SPECIES; three of which are more particularly to our purpose.

1. AMYGDALUS *Communis*: The COMMON ALMOND; a tall deciduous shrub; native of Africa.

2. AMYGDALUS *Nana*: The DWARF ALMOND; a deciduous shrub; native of Asia Minor.

3. AMYGDALUS *Persica*: The PEACH; a deciduous tree; of what country is uncertain.

1. THE COMMON ALMOND will grow to near twenty feet high; and whether planted singly in an open place, or mixed with others in clumps, shrubbery-quarters, &c. shews itself one of the finest flowering trees in nature. Those who never yet saw it, may easily conceive what a noble appearance this tree must make, when covered all over with a bloom of a delicate red, which will be in March; a time when very few trees are ornamented either with leaves or flowers. No ornamental plantation, therefore, of what sort or kind soever, should be without almond-trees. Neither are the beauties of the flowers the only thing desirable in this tree: The fruit would render it worthy of planting, were there no other motive. It ripens well, and its goodness is not unknown to us.

The *White-flowering Almond*, well known in our nurseries, is a variety of this species, and is cultivated for the sake of the flowers.

flowers and the fruit, though the flowers are inferior to the others. Neither is this tree so proper to plant singly in open places, or near windows, for the show of its flowers; for although they come out early, yet the whole bloom is subject to be taken off in one night's nipping weather, which frequently happens at this season. Its station, therefore, should be in shrubbery-quarters, in well-sheltered places; and in such it will flower exceeding well, and shew its white blossoms to great advantage. When it is designed for fruit, it should be set against a south wall, in a well-sheltered place, otherwise there will be little hopes of success.

2. The DWARF ALMOND. Of this tree there are two sorts, the single and the double. Both grow to about four or five feet high, and are in the first esteem as flowering-shrubs. The single sort has its beauties; but the double kind is matchless. In both, the flowers are arranged the whole length of the last year's shoots; their colour is a delicate red; and they shew themselves early in the spring, which still enhances their value.

3. The PEACH-TREE has hitherto been planted against walls for the sake of the fruit; but, says HANBURY, as I hardly ever knew a person who was not struck with the beauty of the flowers when in full blow against a wall, why should it not have a share in wilderness-quarters and shrubberies, amongst the sorts of almonds, &c.? It may be kept down, or permitted to grow to the height of the owner's fancy; and the flowers are inferior to none of the other sorts. Add to this, they frequently, in well-sheltered places, produce fruit which will be exceedingly well-flavoured; and thus the owner may enjoy the benefit of a double treat. The above observations respect the single peach; with regard to the double-flowered, it is generally propagated for ornamental plantations, and is universally acknowledged to be one of the finest flowering-trees yet known. Against a wall, however, these trees are always the fairest; and if they have this advantage, they are succeeded by very good fruit.

All these sorts are PROPAGATED by inoculating them into plum-stocks, in August. The stocks should be first planted in the nursery, when of the size of a straw, and the first or second summer after they will be ready to receive the bud. The usual method

method of inoculation must be observed, and there is no danger of success; though it may be proper to observe, that the double-blossomed peach should always be worked into the stocks of the mufel-plum. The two sorts of Dwarf Almond may also be propagated by layers, or from the suckers, which they sometimes send forth in great plenty.

A N A G Y R I S.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower contains ten males and one female. There is only one SPECIES:

ANAGYRIS *Fœtida*: The FETID ANAGYRIS, or Stinking Bean Trefoil; a *deciduous shrub*; native of Italy, Sicily, and Spain.

THE ANAGYRIS is a shrub of about ten feet growth. The leaves are different in the different varieties: In one sort they are oval, and moderately broad; in the other they are oblong and narrow; but all of them are hoary. The flowers are produced from the sides of the branches, in May, like those of the *Laburnum*: They are numerous, of a bright yellow colour, but seldom succeeded by good seeds in these parts.

The best method of PROPAGATING these plants is, 1st, by the seeds, which should be procured from the countries where they ripen well. Sow them in a border of good rich earth, in a well-sheltered place, and sift over them about half an inch of fine mould. March is a very good month for this business; and when the plants appear, if the weather proves dry, frequently give them water; keep them clean of weeds all summer, and at the approach of winter prick round the beds some furze-bushes very close: These will break the keen edges of the black winds; for common frosts these plants bear moderately well. In the spring let them be set out in the nursery-ground, at a foot distance from each other. Here let them stand a year or two, and they will be of a proper size to be finally planted out. 2. These plants may also be propagated by layers. For this purpose, a
few

few plants should be set for stools. Let them grow one summer, to get good hold of the ground, and then head them down. The summer following they will make strong shoots, which in the autumn should be layered. They will readily strike root, and by the autumn following will be good plants. The weakest of these may be set out in the nursery-ground for a season or two; but the strongest may be immediately planted out.

A N D R O M E D A.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower contains ten males and one female. There are fifteen SPECIES; three only of which are yet enured to this climate:

1. ANDROMEDA *Paniculata*: The VIRGINIAN ANDROMEDA; a *deciduous shrub*; native of Virginia.

2. ANDROMEDA *Calyculata*: The CANADIAN ANDROMEDA; a *low deciduous shrub*; native of Canada, Siberia and Ingria.

3. ANDROMEDA *Mariana*: The MARYLAND ANDROMEDA; a *very low deciduous shrub*; native of Maryland and other parts of North America.

1. The VIRGINIAN ANDROMEDA is a branching shrub, about four feet high. The leaves are oblong, pointed, plane, and are placed alternately on the branches. The flowers come out in panicles from the ends of the branches: They are of a pale yellow colour, and come out in July, but are rarely succeeded by good seeds in England.

2. CANADA ANDROMEDA is a low branching shrub, hardly a foot and a half high. The leaves are oval, spear-shaped, obtuse, reclined on their borders, and possessed of numerous small punctures. The flowers grow in short leafy spikes, from the ends of the branches: Their colour is white, they appear in July, and are seldom succeeded by good seeds in this country.

There is a *variety* of this species, with oval obtuse leaves, of a thick substance, and which, in mild seasons, continue on the plants all winter.

3. **MARYLAND ANDROMEDA.** This is a shrub, about two feet high, sending forth several ligneous stalks from the root. The leaves are oval, entire, of a pale green colour, and grow alternately on short footstalks. The flowers come out in small bunches from the points of the stalk : They are of a greenish colour, come out in June and July, and are sometimes succeeded by five-cornered capsules, full of seeds ; which, nevertheless, seldom ripen in England.

PROPAGATION : These plants succeed best upon boggy and moist grounds. You must procure the seeds from the places where they grow naturally ; a year before which a boggy or the moistest part of your garden should be dug, and the roots of all weeds cleared off. As the weeds begin to rise, so constantly should the ground be again dug, and sea or drift sand should be plentifully mixed with the natural soil. By this management till the seeds arrive, the ground being made tolerably fine, the seeds should be sown very shallow in the moist or boggy land ; or if the land should be so boggy that it cannot be easily worked, so as to be proper for the reception of the seeds, then let a sufficient quantity of soil from a fresh pasture, mixed with drift sand, be laid over the bog, and let the seeds be sown therein. The bog will in time absorb this soil, but the seeds will come up ; and this is the most effectual method of procuring plants of this kind from seeds. The first year after they come up they should be shaded in very hot weather ; and after that they will require little or no care. Another method of encreasing these shrubs is by layers, or suckers ; so that whoever has not the conveniency of procuring the seeds from abroad, should get a plant or two of the sorts he most likes : These he should plant in a boggy situation ; and in a very little time he will have encrease enough ; for they throw out suckers in prodigious plenty, and, if they like the situation, to a great distance. These may be taken off, and planted where they are to remain.

A N N O N A.

LINNEAN Class and Order, *Polyandria Polygynia* : Each flower contains many males and many females : There are nine species ;
one

one only of which is sufficiently hardy for the open air of this climate.

ANNONA Triloba : The PAPAWE OR CUSTARD-APPLE ; a tall shrub ; native of the West-Indies.

The PAPAWE grows to about sixteen or eighteen feet high. The leaves are large, and shaped like a spear, and they fall off pretty early in the autumn. The flowers, which will shew themselves in the beginning of May, are of a kind of chocolate colour tinged with purple, and grow two or three on a footstalk. The fruit is large, and never ripens in England ; but in the countries where it grows naturally, it is eaten by the meanest of the inhabitants. The difference of its shape from that of a pear is, that its widest part is nearest the footstalk ; and it contains a number of large seeds lying in a row. It is a native of Maryland, Carolina, Virginia, and the Bahama-Islands ; and from thence we have the seeds brought, by which numbers of plants are annually raised.

The manner of RAISING them is thus : Let a bed be prepared in a moistish part, that is exceedingly well sheltered, and naturally sandy, or inclined thereto. If the soil is opposite to this, let a fourth part of drift sand be mixed with the mould ; and having obtained the seeds from abroad, sow them in this bed about half an inch deep, letting the seeds be at some distance from each other. It is probable they will come up in the spring, though they sometimes remain till the second, nay the third spring before they make their appearance. When this happens, the beds must be weeded all the time, and the mould at the surface gently loosened, if it should be inclined to crust over. After the plants are come up in the spring, no other than the usual care of seedlings need be taken, until the autumn, when the beds must be hooped over, to be covered with mats at the approach of any frost ; and the gardener must constantly observe the weather, whether the air hath the least tendency to it, that he may cover the bed over ; for one night's hard frost, while they are so very young, would destroy them all. With this careful eye he must constantly watch over these plants all winter. He must double his covering as the frost encreases, and must always uncover them again in mild and open weather. The second winter, the same care must be observed, though so strict an eye will not be necessary ; for although they will be subject to

be destroyed by hard frosts, yet if a gentle frost should catch them unawares to the gardener in the night, there will not be much danger of their suffering; for they will be got tolerably strong by the second summer's shoot: They will, nevertheless, be too tender to stand the brunt of a winter's frost for a year or two after that; and consequently must have a proportional share of this attention every year during these months. By this time the plants will have grown to be tolerably strong, and may be taken up and planted where they are to remain; though their situation should be well defended; for a severe frost in an exposed place would still overpower them; though, after they have grown to be of larger size, they are hardy enough.

If a person has the conveniency of a green-house, or some such room, he may sow his seeds in boxes or pots filled with maiden earth, from a rich pasture, mixed with drift sand. These boxes or pots should be afterwards plunged into the natural mould, in a shady part of the garden; and the autumn after the plants are come up, they may be removed into the green-house, where they will be naturally protected from the injuries of weather. This protection may be afforded them every winter, till they are strong enough to defend themselves, when they may be turned out of the boxes or pots, mould and all, into the places where they are designed to remain.

A R A L I A.

LINNEAN Class and Order, *Pentandria Pentagynia*: Each flower contains five males and five females: There are five SPECIES; only one of which is adapted to our purpose:

ARALIA Spinosa: The ANGELICA TREE, or PRICKLY ANGELICA: a deciduous shrub; native of Virginia.

The PRICKLY ANGELICA: The height to which this tree will grow, if the soil and situation wholly agree with it, is about twelve feet; and the stem, which is of a dark brown colour, is defended by sharp spines, which fall off; nay, the very leaves, which are branching, and composed of many wings, and are of a pleasant green colour, have these defenders, which are both crook-
ed

ed and strong, and stand as guards to them till the leaves fall off in the autumn. The flowers are produced in large umbels from the ends of the branches: They are of a greenish yellow colour; and their general characters indicate their structure. They make their appearance the end of July or beginning of August; but are not succeeded by ripe seeds in our gardens.

PROPAGATION: This tree will what gardeners call *spawn*; i. e. after digging among the roots young plants will arise, the broken roots sending forth fresh stems; nay, if the roots are planted in a warm border, and shaded in hot weather, they will grow; but if they are planted in pots, and assisted by a moderate warmth of dung, or tanners bark, they will be pretty sure of success; so that the propagation of this tree is very easy. But the general method of propagating it, and by which the best plants may be had, is from seeds, which must be procured from America, for they do not ripen in England; and, after having obtained them, they must be managed in the following manner: The time that we generally receive them is in the spring; so that against their coming we must be furnished with a sufficient number of large pots. These, when the seeds are come, must be filled with fine mould, which, if taken from a rich border, will do very well. The seeds must be sown in these pots as soon as possible after their arrival, hardly half an inch deep, and then the pots should be plunged in a warm place their whole depth in the soil. Care must be taken to break the mould in the pots, and water them as often as it has a tendency to crust over; and if they are shaded in hot weather, the plants will frequently come up the first summer. But as this does not often happen, if the young plants do not appear by Midsummer, the pots should be taken and plunged in a shady place; nay, if they should, there will be still more occasion for this being done; for they will flourish after that better in the shade; and the design of plunging them in a warm place at first was only with a view of setting the powers of vegetation at work, that, having natural heat, artificial shade also may be given them, and water likewise, the three grand necessities for the purpose. The pots, whether the plants are come up in them or not, should be removed into shelter in October, either into a greenhouse, some room, or under an hotbed-frame; and in the spring, when all danger of frost is over, they should be plunged

into the natural ground their own depth in a shady place. Those that were already come up will have shot strong by the autumn following ; and if none of them have appeared, they will come up this spring ; and whether they are young seedlings, or small plants of a former summer's growth, they must be constantly kept clean of weeds, and duly watered in the time of drought ; and this care must be observed until the autumn. In October they must be again removed into shelter, either into a greenhouse, &c. as before, or fixed in a warm place, and hooped, that they may be covered with mats in frosty weather. In the latter end of March following, they should be planted in the nursery way, to gain strength before they are finally planted out. The ground for this purpose, besides the natural shelter, should have a reed-hedge, or something of the like nature, the more effectually to prevent the piercing winds from destroying the young plants. In this snug place the plants may be set in rows : in each of which rows furze-bushes should be stuck the whole length ; and all these together will ensure their safety. But here one caution is to be observed ; not to stick the furze so thick, but that the plants may enjoy the free air in mild weather, and not to take them away too early in the spring, lest, being kept warm the whole winter, and being deprived of their protection, a cutting frost should happen, as it sometimes does even in April, and destroy them. Weeding and watering in dry weather must be their summer's care. They may be stuck again with furze-bushes in the winter ; though it will not be necessary to do it in so close a manner ; and with this care, still diminishing in proportion the number of furze-bushes, they may continue for three or four years, when they may be planted out into the warmest parts of the plantation. With this management these plants will be inured to bear our winters, in well-sheltered places.

The spines which grow on the branches and the leaves admonish us, for our own safety, not to plant this tree too near the sides of frequented walks ; and the consideration of the nature of the tree, which is rather tender at the best, directs us (if we have a mind to retain the sort) to plant it in a warm and well-sheltered situation ; where the piercing frosts, come from what point they will, will lose their edge ; for without this, they will be too tender to stand the test of a severe winter ; though it has often happened, that after the main stem of the plant has been
destroyed,

destroyed, it has shot out again from the root, and the plant by that means been both encreased and preserved.

A R B U T U S.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower contains ten males and one female. There are ten SPECIES; two of which are proper for our purpose.

1. ARBUTUS *Unedo*: The ARBUTUS, or the COMMON STRAWBERRY TREE; an evergreen tree; native of Ireland and many parts of Europe.

2. ARBUTUS *Andrachne*: The ANDRACHNE; or the ORIENTAL ARBUTUS; or the ORIENTAL STRAWBERRY-TREE; an evergreen tree; native of the East.

1. The ARBUTUS. Of this Species there are four Varieties: namely,

THE OBLONG-FRUITED,		THE RED-FLOWERED, AND
THE ROUND-FRUITED,		THE DOUBLE-BLOSSOMED.

One description is nearly common to them all: And their inconsiderable variation is almost sufficiently shewn in their respective appellations.

The oblong-fruited *Arbutus* will grow to be a middling-sized tree in some countries; for we read of the large uses its wood has been applied to; such as, *Arbutæ crates*, &c. *Arbutæan* harrows, &c. With us it may be kept down to any size. The main stems are covered with a light-brown bark, rough, and falling. The younger branches are of a kind of purple colour, whilst the last year's shoots are of a fine red, and a little hairy. The leaves grow alternately on the branches, and are of an oblong oval figure. They stand on short footstalks, and the oldest leaves make a contrast with the younger by having their footstalk and mid-rib of a fine scarlet colour. They are smooth, and beautifully ferrated. Their upper surface (as in most trees) is of a stronger green than their under; and the young twigs are garnished with them in plenty. These are beauties in common to most trees, in some degree or other; but every thing else almost of this tree that presents itself to consideration is singular: The time of its flowering will be in November and December; when it is rather singular to see a tree in the open ground in full blow; and the

fruit ripens by that time twelvemonth after. The manner and nature of the fruit, which look like very large red strawberries, give it also a singular and delightful look; and this is heightened as they appear all over the tree among the flowers; for that is the time of its being ripe, when the flowers for the succeeding crop are fully out. The flowers themselves make no great figure; they are of a kind of whitish-yellow colour; and are succeeded by the abovementioned Strawberry fruit, which will require a revolution of twelve months, before they perfectly arrive at their maturity and colour. The flowers of the first sort are larger than those of the second; and the fruit is oval, and much larger than our Common Scarlet Strawberry.

The round-fruited sort has its pitcher-shaped flowers, which are succeeded by round scarlet fruit, as wide as they are long; and this is all the difference between these sorts.

The Strawberry-tree with red flowers differs in no respect from the common sort, only the flowers are red, and these constitute a variety from the other sorts of flowers; but the contrast is not so great between their fruit and them, as of the other sorts, their colour approaching too near to a sameness.

The Double-blossomed Strawberry-tree differs in no respect, only that the flowers are double; but this difference is so inconsiderable, that it will not be seen without looking into the flower; and even then the doubleness will appear so trifling as scarcely to merit notice; so that a plant or two, to have it said that the collection is not without it, will be sufficient. Neither ought any more to be admitted; for they will not produce the same plenty of fruit, which constitutes the greatest beauty of these trees, as the single sorts.

The method of PROPAGATING the *Varieties* of the *Arbutus* is by layers and cuttings: the *Species* itself may be raised from seed. By layers they will all grow: The operation must be performed on the youngest twigs; and in some soils they will strike root pretty freely, whilst in others they can hardly be made to grow at all: But before they have lain two summers, you may scarcely venture to look for any. When the roots are struck, the layers should be carefully taken off in the spring, and planted in separate pots; and after well watering them, they should be plunged up to the rims in an hotbed, and this will set them forward; for without this assistance, many of the layers
will

will be lost ; since they are difficult plants to make grow. After the hotbed has forced the seeds into a state of vegetation, the pots may be taken out, and plunged up to the rims in some natural mould, to keep them cool and moist ; and here they may stand for two or three years, or longer, if the pots are large enough, without ever removing or sheltering in winter ; for they are hardy enough to resist our severest cold. When they are to be finally set out, all the mould may be turned out of the pots hanging to the roots ; and having proper holes made ready, they may be planted in them, and the plant will be ignorant of its new situation.

These plants may be increased by cuttings, which must be planted in pots, and have the benefit of a good bark-bed ; in which being constantly shaded and duly watered, many of them will grow. As the plants raised this way will be rather tender by being forced in the bark-bed, it will be necessary to remove them into the greenhouse, or to place them under an hotbed-frame during the first winter : and after that, the pots may be set up to the rims in the ground, and, like the layers, the plants may be turned out at a convenient time into the places where they are to remain.

Next we proceed to the best way of raising the *Common Arabutus* ; and that is from seeds. Let these be taken from the oblong or round-fruited sort. The seeds, which will be ripe some time in November or the beginning of December, for they will not be ripe at the same time in all places, must be then gathered ; and as they should not be sowed until the spring, it will be proper to put them into a pot or jar, mixing with them a quantity of drift-sand ; and this will preserve them sound and good. The beginning of March is the best time for sowing the seeds ; and the best soil for them is maiden earth, taken from a rich pasture at least a year before, with the sward ; and this, by constant turning, being well rotted and mixed, will be ready to receive them. Having filled a different quantity of pots with this fine mould, let the seeds be sown, and but just covered, scarcely a quarter of an inch deep. A dry day should be chosen for the business ; and no watering by the hand should be given them, as it will endanger the setting the mould hard in the pots. Leave them abroad until some rain falls, which at that time may be hourly expected ; and after that, having an hotbed ready, plunge

plunge the pots therein. In less than six weeks you may expect your plants to appear; when much air should be afforded them, and frequent waterings, in small quantities, gently sprinkled over them. After this, they may be hardened to the air by degrees, and the pots set up to the rims in the natural mould, in a shady place. In October they should be removed into the greenhouse, or some shelter, in frosty weather; though they should always be set abroad in mild open weather. In the spring they may be shook out, and planted in separate pots; and they should have the advantage also of a hotbed to set them a-growing: their future management may be the same as was directed for the layers. When these trees are to be planted out, very little regard need be paid to the soil or situation; for they will grow almost any where, and resist our severest northern blasts. One thing, however, the gardener must constantly observe, in order to continue his trees in their beauty; viz. as often as a heavy snow falls, so constantly should he go and shake the boughs; for it will lodge amongst the leaves and branches, in such great quantity, as to weigh down and split the largest branches; the deformity of which afterwards may be easily conceived. Besides, many years must expire before the tree will, if ever it should, grow to its former beauty; to preserve this, therefore, makes the narrowly watching these trees in snowy weather highly necessary.

2. The *ANDRACHNE* will grow to a larger size than the *Arbutus*. The leaves are smooth, and nearly of the same figure as the preceding sort; though they are larger, and have their edges undivided. The flowers grow like the other sorts; are of the same colour; and they are succeeded by large, oval, scarlet fruit. It is called the Oriental Strawberry-Tree, because this sort grows plentifully in many parts of the East, and is useful to the inhabitants for many purposes in life.

The *Andrachne* may be PROPAGATED in the same manner as the *Arbutus*.

A R T E M I S I A.

LINNEAN Class and Order, *Syngenesia Polygamia* 'Superflua'; Hermaphrodite florets containing five males and one female, and female

female florets containing one pistil, in the same discous flower : There are twenty-five SPECIES, which are principally herbaceous ; one only being intitled to a place amongst the tribe of ornamentals.

ARTEMISIA *Arborescens* : The TREE-WORMWOOD : a non-deciduous shrub : native of Italy and the East.

The TREE-WORMWOOD rises with an upright stalk to the height of about six feet. The leaves are its chief excellence, and of these there are two or three sorts : One sort is very much divided, or cut into several narrow segments ; those of the other are broader. They are very hoary ; and as they continue on the branches all winter, they have a singular and an agreeable effect among the evergreens at that season. The flowers are small, and have very little beauty ; they are collected into roundish heads, and I never perceived them to be followed by good seeds.

This plant is easily PROPAGATED by cuttings. Plant them in May, June, July or August, in a shady place, and they will readily grow, especially if they are watered a few times at the first planting. In the autumn these cuttings, which will then have become good plants, should be each set in a separate small pot, and placed under a hotbed frame, or in the greenhouse, to be preserved all winter. In the spring they may be turned out into the places where they are designed to remain, which must be naturally warm and well sheltered, or they will be liable to be destroyed by the severity of the following winter. In such a situation they will live for many years ; though it may be advisable to keep a plant or two in the greenhouse, to keep up the stock, if a more than common hard winter should put a period to those that are planted abroad.

A T R I P L E X.

LINNEAN Class and Order, *Polygamia Monoecia* : Hermaphrodite flowers containing five males and one female, and female

male flowers containing one pistil, on the same plant. There are twelve SPECIES; two only of which are to our purpose.

1. *ATRIPLEX Halimus*: BROAD-LEAVED SEA PURSLAIN-TREE: *a non-deciduous shrub*; grows naturally upon the sea-coast of Spain and Portugal; as also in Virginia.

2. *ATRIPLEX Portulacoides*: NARROW-LEAVED SEA-PURSLAIN-TREE; *a non-deciduous shrub*; native of our own sea-coast, and of the North of Europe.

1. The BROAD-LEAVED PURSLAIN-TREE generally grows to about five or six feet; and will send forth its branches so as to spread around, and form a large broad head. The young branches are covered with a smooth white bark; that of the older is of a light grey colour, which will be peeling lengthways, and falling, especially in the spring. The branches are exceedingly brittle, and their inside is green to the very pith, of which there is very little. The leaves are soft, white, and silvery, and nearly of the shape of the Greek letter *Delta*. They have their edges entire; and look well at all times, especially in winter, when they cause as great a variety as possible among those trees that retain their leaves at that time. This shrub seldom flowers in our gardens; and when that happens, it is possessed of no beauty to recommend it to the florist.

2. The NARROW-LEAVED PURSLAIN-TREE commonly grows to about four feet high. The branches are numerous and grey; and they naturally spread abroad in a bushy manner. The leaves are silvery; though not so white as the other sort; but they are narrower, which occasions its being so distinguished; and of an oval figure; and by them the shrub receives no small ornament. The flowers have little beauty.

These shrubs are PROPAGATED by cuttings; which will grow, if planted at any time of the year; though the best way is to take the cuttings in March, of the strongest former summer's shoots, to cut them into lengths about a foot each, and to plant them a third part deep in the mould. These will all readily take root, and be good plants by the autumn following. In summer, slips and cuttings may be planted; but then it will be advisable to plant them pretty close together in beds, and afterwards to hoop the beds, and shade them from the heat at that

that time. They will soon take root ; and after that will require no further trouble : But until that is effected, they should be watered and shaded in the hot weather, and the mats should be constantly taken off in the evening, and also in rainy, moist, or cloudy weather ; and by this means plenty of plants may be raised. If it happened to be a dripping day when they were first planted, much trouble in shading and watering will be saved, as they may be nearly upon striking root before the weather clears up. These shrubs should be always raised at a distance from farm-yards, barns, &c. where there are sparrows ; for these birds are so exceedingly fond of the leaves, that when once they find them out, they will never leave nor forsake them until they have entirely stripped the plants ; and though the shrub will shoot out afresh, yet they will as constantly repair to their repast, and will thus continue to prey upon them until they have entirely destroyed them. I am obliged (continues HANBURY) to give this precaution, because all my plants of these sorts are thus constantly eat up by the sparrows in my gardens at Church-Langton, as often as I plant them ; so that I am obliged to keep them at Gumley, and in my other distant nurseries, where they remain free from such devourers.

These plants require a warm sheltered situation, being subject to be cut by the early frosts.

A Z A L E A.

LINNEAN Class and Order, *Pentandria Monogynia* : Each flower contains five males and one female. There are six SPECIES ; two of which are proper for the shrubbery.

AZALEA Nudiflora : The RED AMERICAN UPRIGHT HONEYSUCKLE ; or the RED AZALEA ; a *deciduous shrub* ; native of Virginia.

AZALEA Viscosa : The WHITE AMERICAN UPRIGHT HONEYSUCKLE ; or The WHITE AZALEA ; a *low deciduous shrub* ; native of Virginia.

1. The RED AZALEA has several stems arising from the same root, which will grow to seven or eight feet high. The leaves
are

are of an oval figure, smooth, entire, and placed alternately on the branches. The flowers are produced in clusters from the sides of the branches, on long naked footstalks : Their colour is red, and they are agreeably scented ; each composed of a long naked tube, cut at the top into five spreading segments. They will be in blow in July ; but they seldom ripen their seeds in our gardens. There is a variety of this, with yellow flowers.

2. The WHITE AZALEA. From the root of this arise several slender brown stems, to three or four feet high. The leaves are spear-shaped, narrow at their base, have a rough border, and grow in clusters. The flowers terminate the branches in clusters, coming out between the leaves. They are finely scented, and each of them has a tube of near an inch long, divided at the top into five segments, two of which are reflexed. Their colour is white, with a bad yellow on their outside ; they will be in blow in July, but are never succeeded by seeds in our gardens.

These sorts are PROPAGATED, 1. By layering the young shoots ; and for this purpose, a slit must be made on each, as is practised for carnations : The autumn is the best season for the work. When the layers have struck good root, they may be removed into the nursery, and planted in lines at a small distance from each other ; where after having stood a year or two at the most, they will be proper plants to be planted out. 2. These sorts also propagate themselves very fast ; for as they throw up many stems from the same roots after they have stood a few years, some of these may easily be taken off, with some root at each, and either planted in the nursery-ground, or the places where they are to remain.

B E R B E R I S.

LINNEAN Class and Order, *Hexandria Monogynia* : Each flower contains six males and one female : There are three SPECIES ; two of which are here treated of :

1. *BERBERIS Vulgaris* : The COMMON BERBERY : a well-known *deciduous shrub*, common in our hedges.

2. *BERBERIS Cretica* : The CRETAN, or BOX-LEAVED BERBERY : a *low deciduous shrub* ; native of Crete.

1. The

1. The COMMON BERBERRY. This shrub is distinguished by the acidity of its leaves, the sharpness of its spines, the yellowness of its inner bark, and the scarlet colour of its berries, which add a beauty to our hedges in winter, and afford a favourite pickle and garnish for our tables. Hanbury enumerates other uses of the Berberry, particularly in medicine, and recommends the cultivation of it in the warmest manner. There is however an evil attendant of the Berberry-bush which ought to confine it within the pale of our gardens and shrubberies; we mean its poisonous effect upon corn; more particularly upon wheat. This is a circumstance which has been long known to the common farmers in different parts of the kingdom, especially in Norfolk, where the farmers are more observant and much more enlightened than those useful members of society in general are. The idea, nevertheless, has been treated by theoretical writers on Husbandry as chimerical and superstitious; and has been brought forward as one of those vulgar errors of farmers which ought to induce gentlemen and men of genius to rescue so useful a science as that of Agriculture out of the hands of ignorance. Being however always ready to hear the opinion of *professional* men, and having been assured by many sensible farmers of the truth of this matter, we had a few years ago a Berberry-bush planted, in the month of February, in the centre of a large piece of wheat. No obvious effect took place until the corn began to change its colour before harvest, when a long blackening stripe became so conspicuous amongst the growing whiteness of the wheat, that it might have been distinguished at a mile's distance. It resembled the tail of a comet; the bush representing the comet itself; and what rendered the experiment striking, whilst on one side the effect did not reach more than three or four feet, on the opposite side it was obvious to the distance of ten or twelve yards; notwithstanding the top of the shrub planted was not much larger than a man's head. At harvest, the ears which grew in the immediate neighbourhood of the bush, stood erect, the grains shriveled and empty; — as the distance from the Berberry increased the effect lessened, vanishing imperceptibly: whilst the grain of the rest of the field was of a good quality. We do not mean in this place to comment upon the fact, or to attempt to account for so singular an effect by the help of *reasoning* only; having in our intentions a suite of *experiment*,

in order to endeavour to come at the cause. Our motive for mentioning the fact at present is to induce others to make similar experiments, as well as to stimulate gentlemen to extirpate from their estates so pernicious a plant ; more particularly from the hedges and borders of arable fields.

There are three *Varieties* of the Common Berbery :

The Berbery with white fruit.

The Berbery with black fruit.

The Berbery without stones : which last is the sort principally cultivated for the berries.

2. The BOX-LEAVED BERBERY grows to a yard or four feet high, and is possessed of many sharp spines at the joints. The leaves are like those of the box-tree, between which the flowers come out, on slender footstalks. But as this sort never produces any fruit in England, and being also liable to be killed by hard frosts, it is seldom propagated in our gardens.

The PROPAGATION of the Berbery is as follows. 1. When a quantity of the common Berbery is wanted, the best way is to raise it from the seeds, which should be sown, soon after they are ripe, in a bed made in any part of the garden. These will frequently remain till the second spring before the plants come all up; till which time the beds should be weeded as often as the weeds appear ; for if they are neglected so as to get strong, by pulling them up many of the seeds will also be drawn out of the bed by their roots. After the plants have grown one year in the seed-bed, they should be planted out in the nursery, where they may remain for about two years, when they will be fit to plant out finally. This is the most expeditious method of raising a large quantity of these trees, when wanted. 2. Another method of propagating the Berbery is by layers ; a method by which all the sorts may be encreased ; and in the performance of which, no other art or trouble need be used, than laying the branches down in the ground, without either slit or twist. If this is done any time in the winter, by the autumn following they will have taken good root ; the strongest of which layers will be then fit to plant out ; whilst those that are weaker may be planted in the nursery-ground, to gain strength. 3. The cuttings also of these trees will grow ; for if they be planted in October, in a moistish good earth, they will most of them strike root ; so that the propagation of this tree by any of these ways is very easy.

easy. Whoever is desirous of the Box-leaved Berbery must afford it a warm dry soil, in a well-sheltered place.

B E T U L A.

LINNEAN Class and Order, *Monoecia Tetrandria* : Male flowers containing four stamens, and female flowers containing two pistils, disposed in separate cylindrical catkins upon the same plant. There are five SPECIES :

1. *BETULA Alba* : The COMMON WHITE BIRCH : a well known *deciduous tree* ; native of this country, as also of most of the colder parts of Europe.

2. *BETULA Nigra* : The VIRGINIAN BLACK BIRCH : a *deciduous tree* ; native of Virginia, as also of Canada.

3. *BETULA Lenta* : The CANADA BIRCH : a *deciduous tree* ; native of Canada, and of Virginia.

4. *BETULA Nana* : The DWARF BIRCH : a *deciduous shrub* ; native of Lapland, Russia, Sweden, and Scotland.

5. *BETULA Alnus* : The ALDER : a well known aquatic *deciduous tree* ; common in our swamps and low grounds ; it is also common in most parts of Europe, and in America.

1. The COMMON WHITE BIRCH. This tree is so common, and its uses so well known throughout the kingdom, that any description of it seems unnecessary. It is in general of a humble growth ; however, in a soil and situation it affects, it will rise to a great height, and swell to a considerable size. There is a spruceness in its general appearance in summer ; and in winter its bark sometimes exhibits, in its variegations of red and white, no inelegant object. Were it not for its being so commonly seen upon poor soils, and in bleak inhospitable situations, as well as for the mean and degrading purposes to which it is universally put, the Birch would have some claim to being admitted to a place among the *ornamentals*. Its *uses* are chiefly for brooms, fuel, and charcoal : if it be suffered to grow to a proper size, it will make tolerable gates, hurdles, rails, &c : it is also used by the patten-makers. HANBURY says, it is also applicable

to larger uses; and is highly proper for the fellies of broad-wheel waggons, it being inlocked so as not to be cleaved. "I have been informed (says he) by an old experienced wheelwright, that old Birch-trees cannot be cleft, as the grains run crossways, and that he prefers it for several uses in his way to most wood; and as I have seen several of these trees more than two feet square, the timber of the Birch may perhaps be of more value than it has hitherto been esteemed." Its use in making wine is well known. But although we enumerate the uses to which the Birch is applicable when it is already in possession, we do not mean to recommend in general terms the planting of Birch; except in bleak and barren situations where no other tree will thrive; and except as a screen and guardian to nurse-up and defend from chilling blasts plants of greater value.

The PROPAGATION of the Birch is easy: it may be raised either from seeds, or by layering; and it will flourish in almost any soil or situation.

2. The BLACK VIRGINIA BIRCH will grow to upwards of sixty feet in height. The branches are spotted, and more sparingly set in the trees than the common sorts. The leaves are broader, grow on long footstalks, and add a dignity to the appearance of the tree; and as it is naturally of upright and swift growth, and arrives at so great a magnitude, HANBURY thinks it ought to have a share among our forest-trees, and to be planted for standards in open places, as well as to be joined with other trees of its own growth in plantations more immediately designed for relaxation and pleasure.

There are several *varieties* of this species, differing in the colour, size of the leaves, and shoots; all of which have names given them by nurserymen, who propagate the different sorts for sale; such as, 1. *The Broad-leaved Virginian Birch*; 2. *The Poplar-leaved Birch*; 3. *The Paper-Birch*; 4. *The Brown Birch*, &c.

3. CANADA BIRCH. This grows to a timber-tree of sixty or more feet in height. The leaves are heart-shaped, oblong, smooth, of a thin consistence, pointed, and very sharply serrated. They differ in colour; and the *varieties* of this species go by the names of, 1. *Dusky Canada Birch*; 2. *White-Paper Birch*; 3. *Poplar-leaved Canada Birch*; 4. *Low-growing Canada Birch*,

Birch, &c. The bark of this species is very light, tough, and durable ; and the inhabitants of America use it for canoes.

4. DWARF BIRCH. This is a low branching shrub, about two feet high. The leaves are round, and their edges are serrated. It hardly ever produces either male or female flowers, and is chiefly coveted when a general collection of plants is making.

The method of PROPAGATING all the foreign sorts is, 1. From seeds. We receive the seeds from America, where they are natives ; and if we sow them in beds of fine mould, covering them over about a quarter of an inch deep, they will readily grow. During the time they are in the seminary, they must be constantly weeded, watered in dry weather, and when they are one or two years old, according to their strength, they should be planted in the nursery, in rows, in the usual manner. Weeding must always be observed in summer, and digging between the rows in winter ; and when the plants are about a yard or four feet high, they will be of a good size to be planted out for the shrubbery-quarters. A part, therefore, may be then taken up for such purposes ; whilst the remainder may be left to grow for standards, to answer such other purposes as may be wanted. 2. These trees may also be propagated by layers ; and this is the way to continue the peculiarities in the varieties of the different sorts. A sufficient number of plants should be procured for this purpose, and set on a spot of double-dug ground, three yards distance from each other. The year following, if they have made no young shoots, they should be headed to within half a foot of the ground, to form the stools, which will then shoot vigorously the summer following ; and in the autumn the young shoots should be plashed near the stools, and the tender twigs layered near their ends. They will then strike root, and become good plants by the autumn following ; whilst fresh twigs will have sprung up from the stools, to be ready for the same operation. The layers, therefore, should be taken up, and the operation performed afresh. If the plants designed for stools have made good shoots the first year, they need not be headed down, but plashed near the ground, and all the young twigs layered. Thus may an immediate crop be raised this way ; whilst young shoots will spring out in great plenty below the plashed part, in order for layering the succeeding year. This work, therefore, may be repeated every autumn or winter ; when some of the strongest

layers may be planted out, if they are immediately wanted ; whilst the others may be removed into the nursery, to grow to be stronger plants, before they are removed to their destined habitations. 3. Cuttings also, if set in a moist shady border the beginning of October, will frequently grow : But as this is not a sure method, and as these trees are so easily propagated by layers, it hardly deserves to be put in practice.

5. The ALDER. This well-known aquatic will grow to a large timber tree. The Alder, like the Birch, suffers, as an *ornamental*, from an association of ideas ; we not only see it very common, but we see it in low, dreary, dirty situations : nevertheless, if the Alder be suffered to form its own head in an open advantageous situation, it is by no means an unsightly tree : in Stow Gardens, in what is called the old part, there are some very fine ones ; and in coming round from the house by the road leading to Buckingham, there is one which is truly ornamental. Hacked and disfigured in the manner in which Alders in general are, they have but little effect in doing away the unsightliness of a swamp ; but if they were suffered to rise in groups and singlets, open enough to have room to form their full tops, and close enough to hide sufficiently the unseemliness of the surface, even a moor or a morass seen from a distance might be rendered an agreeable object. Many *uses* of Alders have been enumerated by authors : they were, indeed, more numerous than they are at present. Leaden pipes have superseded them as pump-trees and water-pipes, and logwood has rendered their bark of little value. They are however still useful as piles, and make tolerable boards ; they are also convenient as poles, and make good charcoal : great quantities are cut up for patten wood, and for the wooden heels and soles of shoes. But upon the whole the consumption is too inconsiderable to make them an object of the planter's notice, except in particular situations. For securing the banks of rivers we know of nothing better than the Alder ; its roots are stronger and more interwoven with each other than those of the *Salix* tribe : also in low swampy situations where the ground cannot be drained but at too great an expence, the Alder may be planted with propriety and advantage : but wherever the soil is or can be made pasturable, the Alder should by no means be permitted to gain a footing. Its suckers and seedlings poison the herbage ; and it is a fact well known to the observant husbandman,

man, that the roots of the Alder have a peculiar property of rendering the soil they grow in more moist and rotten than it would be if not occupied by this aqueous plant. Plantations of Alders should therefore be confined to swampy, low, unpasturable places; except when they are made for the purposes of ornament; and in this case the native species ought to give place to its more ornamental *varieties*, of which HANBURY makes five; namely. 1. The Long-leaved Alder. 2. The White Alder. 3. The Black Alder. 4. The Hoary-leaved Alder. 5. The Dwarf Alder.

The PROPAGATION of the Alder, like that of the other aquatic natives, is very easy: it may be raised either from suckers, from cuttings, or by layering; and no doubt from seed, though this mode of propagation is seldom practised in this country. EVELYN mentions a peculiar method of raising this tree from cuttings or truncheons, which he calls the *Jersey-manner*: he says, "I received it from a most ingenious gentleman of that country: it is, to take truncheons of two or three feet long at the beginning of the winter, and to bind them in faggots, and place the ends of them in water till towards the spring, by which season they will have contracted a swelling spire or knur about that part, which being set does (like the Gennet-moil Apple-Tree) never fail of growing and striking root." MILLAR recommends truncheons of three feet long, two feet of which to be thrust into the ground. HANBURY says, that truncheons are uncertain, and strongly recommends layering; which for preserving the varieties, as well as for ornamental plantations of Alders in general, is the best method.

B I G N O N I A.

LINNEAN Class and Order, *Didynamia Angiospermia*: Each flower contains four males and one female; two of the males being shorter than the other two; and the seeds being inclosed in a pod. There are eighteen SPECIES; five of which are enured to this climate.

1. *BIGNONIA Catalpa* : The CATALPA ; a *deciduous tree* ; native of Carolina.

2. *BIGNONIA Sempervirens* : The EVERGREEN BIGNONIA, or the VIRGINIA JASMINE, or the VIRGINIA CLIMBER ; an *evergreen climber* ; native of Virginia.

3. *BIGNONIA Unguis* : The CLAW BIGNONIA, or the QUADRIFOLIATE BIGNONIA ; a *deciduous climber* ; native of Barbadoes, and other West-India Islands.

4. *BIGNONIA Capreolata* : The TENDRIL BIGNONIA, or the CAPREOLATE BIGNONIA ; a *deciduous climber* ; native of North America.

5. *BIGNONIA Radicans* : The SCARLET TRUMPET FLOWER ; a *deciduous climber* ; native of Carolina, Virginia, and Canada.

1. The CATALPA will grow to the height of thirty or forty feet ; and as the stem is upright, and the leaves fine and large, it should be planted as a standard in the midst of fine opens, that it may without molestation send forth its lateral branches, and shew itself to every advantage in view. These opens, nevertheless, should be such as are well sheltered, otherwise the ends of the branches will be destroyed by the severity of the winter's frost, which will cause an unsightly appearance ; and the leaves, being very large, make such a resistance to the summer's high winds, as to occasion whole branches to be split off by that powerful element. The bark of the Catalpa is brown and smooth, and the leaves are cordated. They are about five or six inches in breadth, and as many in length. They stand by threes at the joints, are of a blueish cast, and are late in the spring before they come out. The flowers are tubulous ; their colour is white, having purple spots, and yellowish stripes on the inside. They will be in full blow in August ; but are not succeeded by good seeds in England.

Whoever has the conveniency of a bark-bed may PROPAGATE this tree in plenty, 1. By cuttings, which being planted in pots, and plunged into the beds in the spring, will soon strike root, and may afterwards be so hardened to the open air, that they may be set abroad in the shade before the end of summer ; in the beginning of October, they should be removed into a green-house, or under some shelter, to be protected from the winter's frost. In the spring, after the bad weather is past, they

they may be turned out of the pots, and planted in the nursery-way, in a well sheltered place ; and if the soil be rich, and rather inclined to be moist, it will be the better. Here they may stand for four or five years, the rows being dug in winter, and weeded in summer, when they will be of a proper size to be planted out to stand. These cuttings will often grow in a rich, shady, moist border ; so that whoever can have plenty of them, should plant them pretty thick in such a place, and he may be tolerably sure, by this way, of raising many plants. 2. From seed, which must be procured from America, and should be sown in a fine warm border of light rich mould, or else in pots or boxes ; the seedling plants requiring more than a common care.

2. The EVERGREEN BIGNONIA has almost every perfection to recommend it as a climber ; for though the plants are small, yet if they are trained up to a wall, or have bushes or trees on which to climb, they will mount to a great height, by their twining stalks, and over-top hedges, and even trees, and will form at a distance a grand figure from the sway they will bear. The leaves of Bignonia are single, and of a lanceolate figure. They grow from the joints, are of a fine strong green colour, and very ornamental : but the flowers constitute the greatest value of this plant, on account of the fine odour nature has bestowed on them ; which is to so great a degree as to perfume the circumambient air to a considerable distance. These flowers are of a yellow colour, and less beautiful than some of the other sorts, which is sufficiently recompensed by their extraordinary fragrance. They grow in an erect manner, from the wings of the leaves at each joint, and their figure nearly resembles that of a trumpet. The pods that succeed these flowers are small.

There is a *variety* of this species, which over-tops whatever plants are near it, to a great height. The leaves are of a lanceolate figure, and grow from the joints, often four opposite. They are of a fine green ; but their flowers are produced rather thinly, and stand each on its own footstalk ; and are not possessed of the heightened fragrance of the other.

3. The CLAW BIGNONIA is another noble climber. It rises by the help of claw-like tendrils, the branches being very slender and weak ; and by these it will over-top bushes, trees, &c. twenty or thirty feet high. The branches, however, show their

natural tendency to aspire, for they wind about every thing that is near them ; so that, together with the assistance nature has given them of tendrils, it is no wonder they arrive at so great an height. These branches, or rather stalks, have a smooth surface, are often of a reddish colour, particularly next the sun, and are very tough. The tendrils grow from the joints ; they are bowed, and are divided into three parts. The leaves grow in pairs at the joints, and are four in number at each. These are of an oblong figure, have their edges entire, and are very ornamental to the plant ; for they are of an elegant green colour : their under surface is much paler than their upper, and their footstalks, midrib, and veins, alter to a fine purple. The flowers are monopetalous and bell-shaped. The tube is very large, and the rim is divided and spreads open. They grow from the wings of the leaves, in August, two usually at each joint ; and they are succeeded in the countries where they grow naturally by long pods.

4. The TENDRIL BIGNONIA is another fine climber, which rises by the assistance of tendrils or claspers. The leaves grow at the joints opposite by pairs, though those which appear at the bottom frequently come out singly. They are of an oblong figure, and continue on the plant all winter. The flowers are produced in August, from the wings of the leaves : they are of the same nature, and of the shape nearly of the former ; are large, of a yellow colour, and succeeded by short pods.

5. The SCARLET TRUMPET FLOWER will arrive to a prodigious height, if it has either buildings or trees to climb up by ; for it strikes root from the joints into whatever is near it, and thus will get up to the tops of buildings, trees, &c. be they ever so high. This species has pinnated leaves, which grow opposite by pairs at the joints. These leaves are composed of about four pair of folioles, which end with an odd one. They are of a good green colour, have their edges deeply cut, and drawn out into a long point. The flowers are produced in August, at the ends of the branches, in bunches : they are large, and, like the other, are composed of one tube ; but they are shaped more like a trumpet than any of the sorts. They are of a fine red colour, and make a grand show. This is the sort chiefly known by the name of the Scarlet Trumpet Flower.

There is another sort called, the *Smaller Trumpet Flower*. It differs from the last only in that the leaves and flowers are smaller,

smaller, and some fancy their colour to be a finer red; the colour of the former, in some situations, often approaching to that of an orange colour. These two sorts are more hardy than any of the others, and consequently more proper to be set against old walls, &c. in exposed situations: they will all, however, bear our climate very well; though it would be advisable to set the tender sorts in well-sheltered places, as they will otherwise be in danger of suffering by severe frosts, especially while young, if there be nothing to break them off.

The PROPAGATION of the Climbers. 1. If the shoots are laid upon the ground, and covered with a little mould, they will immediately strike root, and become good plants for setting out where they are wanted. 2. They will all grow by cuttings. The bottom part of the strongest young shoots is the best; and by this method plenty may be soon raised. 3. They are to be raised by seeds; but this is a tedious method, especially of the pinnated-leaved sorts; for it will be many years before the plants raised from seeds will blow.

B U P L E U R U M.

LINNEAN Class and Order, *Pentandria Digynia*: Each flower contains five males and one female. There are sixteen SPECIES; but they are principally herbaceous: There is only one fit for open grounds in this country.

BUPLEURUM *Fruticosum*: The ETHIOPIAN HARTWORT, or the SHRUBBY BUPLEURUM; *an evergreen shrub*; growing naturally amongst the rocks on the coast of the South of France, and also in some parts of Italy.

The ETHIOPIAN HARTWORT is of low growth; it seldom rises more than eight feet high; and will produce plenty of flowers before it gets to the height of one yard. The bark of the oldest stems is of a brown, that on the younger shoots of a reddish colour; but this is not constant, for sometimes it will be greyish, at others of a purplish blue. The leaves are of a fine pale green colour, and placed alternately on the branches. They are of an oblong, oval figure, and have their edges entire. They are smooth, and, being of a delicate pale green, are very ornamental to the shrub. The flowers are produced from
the

the ends of the branches, in longish umbels. They make no great figure (having but a bad yellow colour), appear in July and August; and are succeeded by seeds, which will often, though not always, ripen with us; and by which, when they do, plenty of plants may be raised.

The method of PROPAGATING this shrub is either from seeds sown in pots of rich light loam in March; or from cuttings, in the following manner: The latter end of July is the time; and if the weather be moist or rainy, so much the better; if not, some beds must be well dug, and made moist by watering. The cuttings should be planted in the evening, and the beds must be hooped, to be covered with mats in the heat of the day. On their being first planted, no sun should come near them; but after they have been set a fortnight, they may have the morning sun until nine o'clock, and afterwards shading; observing always to uncover them in the evening, as also in moist, cloudy, or rainy weather. Many of these cuttings will grow; and in winter it will be proper to protect them from the frost with mats in the like manner: After that they will require no further trouble until they are planted out.

This evergreen is scarcely hardy enough to struggle with our severest weather; whenever therefore it is introduced into plantations, it should always have the advantage of a dry soil and a well-sheltered situation.

B U X U S.

LINNEAN Class and Order, *Monoclea Tetrandria*: Male flowers containing four stamens, and female flowers containing three pistils upon the same plant. LINNEUS makes only one SPECIES of *Buxus*: of this however there are several *varieties*; some of which in their present state have every appearance of distinct species*:

* MILLAR says, "The two sorts of Tree Box have been frequently raised from seeds, and constantly produced plants of the same kind with those the seeds were taken from, and the Dwarf Box will never rise to any considerable height with any culture." (Art. *Buxus*.)

1. The

1. The BROAD-LEAVED TREE-BOX : A tall *evergreen shrub* ; native of the southern parts of Europe, and, *it is said*, of this island.

2. The NARROW-LEAVED TREE-BOX.

3. The Gold-striped Box.

4. The Silver-striped Box.

5. The Gold-edged Box.

6. The Curled-leaved Striped Box.

7. The DWARF Box.

1. The BROAD-LEAVED TREE-BOX. This we will consider as the TRUE BUXUS, and the rest as *varieties*. The Box-Tree will grow to the height of fifteen or twenty feet. The leaves are smooth and shining, and the branches of a yellowish hue. There is a swelling softness and a peculiar delicacy and richness in the general appearance of the Box, which, in winter more especially, affords the eye a delicious repast. As an *ornamental* it stands first among the evergreens ; and its *uses* are very many. Indeed, we know of no shrub or tree whatever, the Oak, the Ash, the Elm, and the Beech excepted, so deserving of the planter's notice as the Box. It will flourish upon barren soils and in bleak situations where scarcely any other plant will thrive. The only extensive *plantations* of Box in this kingdom are those upon Box-Hill ; and the soil there is a poor thin-skinned chalky loam, and the situation high, unsheltered, and bleak in the extreme ; yet the plants thrive with great luxuriance. The Box however is by no means partial to poor land and an open country ; it thrives in every soil and in the closest situations, being remarkably patient of the shade and drip of other trees : we have seen it in a neglected grove, growing under a perfect canopy of foliage with the same healthfulness and luxuriance as if it had stood in the open air. This naturally points out a situation and use proper for the Box, which does not seem to have been thought of : we mean that of UNDERWOOD TO THE OAK. Thus employed, what an admirable cover to game ; and how friendly to the sportsman ! what a delightful passage in cultivated nature ; and how profitable to the planter ! Box wood is now worth 16s. per cwt.

2. The NARROW-LEAVED TREE-BOX. Of this beautiful plant there are some *sub-varieties*, that differ in the size of

of their leaves ; but it is the smallest-leaved sort that is here meant ; and as this sort is not very common, it is valued on that account. It is rather of a lower growth than the former sort, and its branches are more slender and numerous. It forms itself naturally into a regular head, and the whole shrub assumes an air of delicacy. The leaves grow opposite by pairs, as in the other sort ; but are produced in great plenty. They are very small and narrow ; and their surface is not so shining as the Broad-leaved Box. As the branches and leaves are the only ornament these trees afford, nothing further need be added to the description of this sort.

3. 4. *The two sorts with striped leaves* are the Common Tree-Box variegated ; though they have a different appearance in their manner of growth, as well as in their striped leaves. They will grow indeed to be as tall ; but the branches will be naturally more slender and weaker, and many of them will often hang downwards, which gives the tree a much different appearance from the plain Tree-Box, whose branches are naturally straight and upright. The leaves of these sorts being beautifully striped, makes them coveted by those who are fond of variegated trees.

5. *The Gold-edged Box* is still the Tree-Box, in the same natural upright growth. The branches of this are not so weak as those of the former sorts, but are upright and strong. Their bark is rather yellower than the green sort : in other respects there is no difference, except that the leaves are tipped or edged with yellow ; which is thought by many to be very ornamental to the shrub.

6. *The Curled-leaved Striped Box* is so called on account of its leaves being a little waved. This, together with the Narrow-leaved, is the scarcest of all the sorts ; and is indeed, like that, a very elegant shrub. It is certainly a variety of the Common Tree-Box ; but it seems rather of lower growth. Its leaves are waved ; and they are variegated in such a manner as to cause the shrub to have what HANBURY calls a luscious look. It makes a variety from all the other sorts, and is truly beautiful and pleasing.

7. The DWARF BOX is a plant so well known as an edging to the borders of flower-gardens, that it needs no description. It may be planted as an evergreen shrub among the lower sorts.

The

The method of PROPAGATING the Box is perfectly easy : it may be raised from cuttings, or from the seed, or by layering.

1. For planting the cuttings, HANBURY says, the month of August is the best time, if any rain falls. If none should happen, then the work must be deferred till it does. Indeed the cuttings may be planted with success any time in the winter, even till the middle of April ; but it is most prudent, if the ground is ready, to have this work done as soon as the first autumnal rains fall. These cuttings ought to be of one and two years wood, should be about a foot long, rather more than the half of which must be planted in the ground. A slip of the last year's wood, stripped from an older branch, is an excellent sett, of which there will be little fear of its growing. The cuttings for the first raising of these trees should be at about four inches distance in the beds ; and, after they are planted, will need no trouble except watering in dry weather, and keeping clean from weeds, till about the third year after planting ; for in all that time they will not be got too big for the *seed-beds*. The season for transplanting these trees from the *seed-beds* to the nursery is any time from August to April ; though if they are to be transplanted early in the autumn, or late in the spring, moist weather should be made choice of for this purpose. The distance these plants should be placed at in the nursery must be a foot asunder, and two feet in the rows ; and here they may stand till they are planted out.

2. The Box-Tree may be also propagated from seeds ; and trees raised this way will often grow to a larger size. In order to raise this tree from seeds, let them be gathered when they are quite ripe, and just ready to burst out of their cells, and soon after sow them in a border of light sandy earth, about half an inch deep. In the spring the plants will appear ; though it sometimes happens that they lie in the beds one whole season before they come up, especially if they happen to have been kept long before they were sowed after being gathered. If they should not appear in the spring, the beds must remain undisturbed till the next, only keeping them free from weeds, and now and then giving them a gentle watering in dry weather. After they have made their appearance, they should stand two or three years in the *seed-bed*, the first of which will require attendance by watering in dry weather. When they are strong enough to
plant

plant out, they may be set in rows in the nursery, as was directed for the cuttings. 3. The Box propagates itself by *layering*; for whether it be borne down by the weight of its own foliage, or be broken down by a fall of snow lodging upon its leaves and branches, it no sooner comes into contact with the ground than it sends forth fibres, and the branch layered (whether by nature, by accident, or by art) presently forms to itself a detached root, which being severed from the main tree, a separate plant is produced.

C A L L I C A R P A.

LINNEAN Class and Order, *Tetrandria Monogynia*: Each flower contains four males and one female. There are two SPECIES; one of which is enured to our climate.

CALLICARPA Americana: The *CALLICARPA*; a *low deciduous shrub*; native of many parts of America, but particularly of Virginia and Carolina.

The *CALLICARPA*. The leaves are roundish, acute, pointed, and are near three inches in length. They are of a hoary cast, being, like the youngest shoots, covered with a kind of woolly matter. They stand opposite by pairs on moderate footstalks, and their edges are made delicate by beautiful small serratures. The flowers are produced in whirls round the twigs, at the setting-on of the leaves, and are of a reddish-purple colour. Each flower separately is small and inconsiderable; though the whole number of which the whirls are composed form, together with the leaves and nature of the growth of the tree, a singular and pleasing aspect. Their appearance is usually in July, and they are succeeded by succulent berries, which are at first red, and afterwards of a deep purple when ripe.

It is PROPAGATED, 1. By cuttings. When by cuttings, they should be planted, in the spring, in a moist sandy border. As the hot weather comes on, they should be constantly shaded, and watered if the bed is not naturally very moist; and by this means

means many of the cuttings will strike root, and become good plants. 2. By layers, which is a certain method, these plants may also be encreased. If a few plants are obtained for this purpose, they should be planted in a warm well-sheltered situation; and if the soil be naturally sandy, it will be the better. The autumn after these stools have shot forth young wood, these young shoots should be laid in the ground, and by the autumn following they will be fit to take off, either for the nursery, or where they are to remain. 3. By seeds, which should be sown in a warm border of sandy earth, a quarter of an inch deep, and should be carefully shaded and the seedlings sheltered; these plants being tender when young, though afterwards they are sufficiently hardy.

C A L Y C A N T H U S.

LINNEAN Class and Order, *Icosandria Polygynia*: Each flower contains twenty males and numerous females. There are two SPECIES; namely, *CALYCANTHUS Precox*; not enured, we believe, to this climate; and

CALYCANTHUS Floridus: The FLOWERING CALYCANTHUS, or CAROLINA ALLSPICE TREE; a *deciduous aromatic shrub*; native of Carolina.

The FLOWERING CALYCANTHUS is a shrub which seldom grows, at least with us, to more than five feet high. It divides into many branches irregularly near the ground. They are of a brown colour, and being bruised emit a most agreeable odour. The leaves that garnish this delightful aromatic are of an oval figure, pointed: They are near four inches long, and are at least two and a half broad, and are placed opposite by pairs on the branches. At the end of these stand the flowers, of a kind of chocolate-purple colour, and which are possessed of the opposite qualities of the bark on the branches. They stand single on their short footstalks, come out in May and June, and are succeeded by ripe seeds in England.

The

The PROPAGATION of this shrub is not very difficult; tho' more than a common care must be taken, after small plants are obtained, to preserve them till they are of a size to be ventured abroad. The last year's shoots of this tree, if laid in the ground, the bark especially being a little bruised, will strike root within the compass of twelve months, particularly if the layers are shaded, and now and then watered in the summer's drought. In the spring they should be taken off, and planted in pots; and if these are afforded a small degree of heat in a bed, they will strike so much the sooner and stronger. After they have been in this bed a month or six weeks, they should be taken out. In the heat of the summer they should be placed in the shade; and if the pots are plunged into the natural ground, it will be so much the better. At the approach of the succeeding winter's bad weather, the pots should be removed into the greenhouse, or some shelter, and in the spring may resume their old stations: and this should be repeated till they are of a proper size and strength to be planted out to stand. If the pots in which they were first planted were small, they may be shifted into larger a spring or two after; and, when they have got to be pretty strong plants, they may be turned out, mould and all, into the places where they are to remain. By this care of potting them, and housing them during the severe weather in winter, the young crop will be preserved; otherwise, if they were planted immediately abroad, the first hard frost the ensuing winter would destroy them all: Tanner's bark about their roots will be the most proper security; as they are at best, when full grown, but tender plants, and must have the warmest situation and the driest soil.

C A R P I N U S.

LINNEAN Class and Order *Monoecia Polyandria*: Male flowers containing many stamens, and female flowers containing two pistils disposed in separate catkins, upon the same plant: There are only two SPECIES:

1. *CARPINUS Betulus*: The COMMON HORNEBAM: a *deciduous tree*, native of Europe and America.

2. CAR-

2. *CARPINUS Ostrya* : The HOP HORNBEAM ; a low deciduous tree ; native of Italy and of Virginia.

1. The COMMON HORNBEAM. This tree, it is said, will grow so high as sixty or seventy feet : we seldom see it, however, arrive at so great a height. Its leaves are of a darkish green, and about the size of those of the Beech, but more pointed and deeply serrated. Its branches are long, flexible, and crooked ; yet in their general appearance very much resemble those of the Beech : indeed there is so great a likeness between those two trees, especially in the shrubby underwood state, that it would be difficult to distinguish them at the first glance, were it not for that glossy varnish with which the leaves of the Beech are strongly marked. In the days of EVELYN, when topiary work was the Gardener's idol, the Hornbeam might be considered as deserving of those *endearing* expressions which that enthusiastic writer has been pleased to lavish upon it : nevertheless, as an *ornamental* in *modern* gardening it stands low ; and its *present uses* are few. As an underwood it affords stakes and edders, fuel and charcoal. Its timber ranks with that of Beech and the Sycamore. The only superior excellency of the Hornbeam lies in its fitness for *SCREEN-FENCES* for sheltering gardens, nurseries, and young plantations from the severities of the winter season. It may be trained to almost any height, and by keeping it trimmed on the sides it becomes thick of branches, and consequently thick of leaves ; which being by their nature retained upon the plant after they wither, a Hornbeam-hedge occasions a degree of shelter nearly equal to that given by a brick wall. Indeed, being less reflective than that expensive screen, it affords a more uniform temperature of air to the plants which stand near it. In this point of view, too, the Hornbeam is useful to be planted promiscuously, or in alternate rows, amongst more tender plants in exposed situations, in the same manner as the Birch ; to which it has more than one preference : namely, it is warmer in winter,—And, HANBURY says, the Hornbeam is peculiarly grateful to hares and rabbits ; consequently it may prevent their injuring its more valuable neighbours : yet, like EVELYN, he seems to be of opinion that it is disaffected by deer. If this be really the case, the Hornbeam may upon many occasions be introduced into deer-parks with singular propriety.

The Common Hornbeam may be PROPAGATED either by layering, (at almost any time of the year) or from seeds, in the following manner : In the autumn the seeds will be ripe ; when, having gathered a sufficient quantity for the purpose, let them be spread upon a mat a few days to dry. After this, they should be sown in the seminary-ground, in beds four feet wide, with an alley of about two feet, and from one to two inches deep. In this bed they must remain till the second spring before they make their appearance ; and all the summer they lie concealed ; the weeds should constantly be plucked up as soon as they peep ; for if they are neglected they will get so strong, and the fibres of their roots will be so far struck down among the seeds, as to endanger the drawing many seeds out with them, on weeding the ground. After the young plants appear, they should constantly be kept clear of weeds during the next summer ; and if they were to be now and then gently refreshed with water in dry weather, it would prove serviceable to them. In the spring following they may be taken out of these beds, and planted in the nursery, in which situation they may remain till they are of a sufficient size to plant out for standards.

Of the Common Hornbeam there are three Varieties : The *Eastern Hornbeam*, *Flowering Hornbeam*, *American Hornbeam*.

The *Eastern Hornbeam* arrives to the least height of all the sorts : about ten feet is the farthest of its growth, and it looks pretty enough with trees of the same growth. The leaves are by no means so large as the common sort ; and as the branches are always closer in proportion to the smallness of the leaves, where a low hedge is wanted of the deciduous kind, this would not be an improper tree for the purpose, either to be kept sheered, or suffered to grow in its natural state. The bark of this sort is more spotted than that of the Common.

The *Flowering Hornbeam* is the most free shooter of any of the sorts ; and will arrive to be the highest, the Common Hornbeam only excepted. It will grow to be thirty or forty feet high. The branches of this tree are less spotted with greyish spots than any of the other sorts. The leaves are very rough, of a dark-green colour, and are longer than the common sort. The property which the Common Hornbeam is possessed of, of retaining

retaining its leaves all winter, does not belong to this sort, the leaves of which constantly fall off in the autumn with other deciduous trees.

American Hornbeam is a more elegant tree than any of the former sorts. The branches are slender, covered with a brownish speckled bark, and are more sparingly sent forth than from any of the others. The leaves are oblong, pointed, and of a palish green, and are not nearly so rough as the Common Hornbeam, though the flowers and fruit are produced in the same manner.

2. HOP HORNBEAM is of taller growth than the Eastern kind. It will arrive to the height of twenty feet, or more. The leaves are nearly the size of the common sort, and some people admire this tree on account of the singular appearance it makes with its seeds, before they begin to fall. There is a *Variety* of this tree, which grows to thirty feet high, shoots freely, has long rough leaves like those of the elm, and longish yellow-coloured flowers, called the Virginian Flowering Hop Hornbeam.

These different sorts of Hornbeam are to be PROPAGATED by layers; for which purpose a few plants for stools must be procured. The stools of the Eastern Hornbeam should be planted a yard, and the other sorts a yard and a half or two yards asunder. After these plants have made some young shoots, they should be layered in the autumn, and by that time twelvemonth they will have struck root; at which time, or any time in the winter, or early in the spring, they should be taken off, and planted in the nursery-way, observing always to brush up the stool, that it may afford fine young shoots for fresh layering by the autumn following. The distance the plants should be allowed in the nursery need be no more than one foot, in rows that are two feet asunder; and here they may stand, with the usual nursery care of weeding and digging the rows in winter, until they are to be finally planted out; though the Virginian Hornbeam will frequently send forth two shoots, which will seem to strive for mastery in the lead. When this is observed, the weakest should always be taken away, otherwise the tree will grow forked.

C E A N O T H U S.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female. There are three SPECIES; one of which will bear the open air of this climate.

CEANOTHUS *Americana*: The NEW-JERSEY TEA, or the RED TWIG; a low deciduous shrub; native of North America.

The NEW-JERSEY TEA. The height to which it will grow in our country is about a yard. The stem, which is of a pale-brown colour, sends out branches from the bottom. These are thin, flexible, and of a reddish colour, which may have occasioned this tree to go by the name of *Red Twig*. The leaves which ornament these branches stand on reddish pedicles, about half an inch in length. They are oval, serrated, pointed, about two inches and a half long, are proportionably broad, and have three nerves running lengthways. From the footstalk to the point they are of a light-green colour, grow irregularly on the branches, and not opposite by pairs, as has been asserted. They are late in the spring before they shoot. The flowers grow at the ends of the twigs in clusters: They are of a white colour, and when in blow give the shrub a most beautiful appearance. Indeed, it seems to be almost covered with them, as there is usually a cluster at the end of nearly every twig; and the leaves which appear among them serve as ornaments only, like myrtle in a distant nosegay: nature however has denied them smell. This tree will be in blow in July; and the flowers are succeeded by small brownish fruit, in which the seeds will sometimes ripen in England.

The PROPAGATION of this plant is by layering; or from seeds sown in pots of compost consisting of two parts virgin earth well tempered, and one part sand, about a quarter of an inch deep; being equally careful to defend the young seedlings from an extremity of cold in winter as from the parching drought of the summer months. The best time of layering them is in the summer, just before they begin to flower: At that time lay the tender twigs of the spring shoots in the earth, and nip off the end which would produce the flowers. By the
autumn

autumn twelvemonth some of them will be rooted. At the stools, however, the plants should remain until the spring, when they should be taken off, and the best-rooted and the strongest may be planted in the nursery-way, or in a dry soil and well-sheltered place, where they are to remain; while the bad-rooted ones and the weakest should be planted in pots; and if these are plunged into a moderate warmth of dung, it will promote their growth, and make them good plants before autumn. In the winter they should be guarded against the frosts; and in the spring they may be planted out where they are to remain.

CELASTRUS.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female. There are eleven SPECIES; two of which are to our purpose.

1. CELASTRUS *Bullatus*: The STAFF-TREE; *an uncertain-deciduous shrub*; native of Virginia.

2. CELASTRUS *Scandens*: The CLIMBING STAFF-TREE, OR BASTARD EVONYMUS; *a climber*; native of Canada.

1. The STAFF-TREE is a shrub of about four feet in growth, rising from the ground with several stalks, which divide into many branches, and are covered with a brownish bark. The leaves are of a fine green colour, and grow alternately on the branches. They are of an oval figure, and have their edges undivided. The flowers are produced in July, at the ends of the branches, in loose spikes. They are of a white colour, and in their native countries are succeeded by very ornamental scarlet fruit; but with us this seldom happens.

It is easily PROPAGATED from seeds sown, about an inch deep, in beds of good fresh mould made fine. They seldom come up until the second, and sometimes not before the third spring. This species is also PROPAGATED by layers; and, to be concise, the work must be performed on the young wood, in the autumn, by a slit at the joint. These layers may be expected to strike root

by the autumn following; when they may be taken up and planted in the nursery-ground. This shrub must have a well-sheltered situation, otherwise the leaves are apt to fall off at the approach of frosty weather. And MILLAR says, that, growing naturally in moist places, it will not thrive well in a dry soil.

2. The CLIMBING STAFF-TREE. The stalks are woody, twining, and will rise by the help of neighbouring trees or bushes to the height of twelve feet. The leaves are oblong, serrated, of a pleasant green colour, pale, and veined underneath, and grow alternately on the branches. The flowers are produced in small bunches, from the sides of the branches, near the ends. They are of a greenish colour, appear in June; and are succeeded by roundish, red, three-cornered capsules, containing ripe seeds, in the autumn.

The plant is exceeding hardy, and makes a beautiful appearance among other trees in the autumn, by their beautiful red berries, which much resemble those of the Spindle-tree, and will be produced in vast profusion on the tops of other trees, to the height of which these plants by their twisting property aspire. They should not be planted near weak or tender trees, to climb on; for they embrace the stalks so closely as to bring on death to any but the hardiest trees and shrubs.

It is PROPAGATED, 1. By laying down the young shoots in the spring. By the autumn they will have struck root, and may then be taken off and set in the places where they are designed to remain. 2. They are also propagated by seeds. These should be soon sown after they are ripe, otherwise they will be two, and sometimes three years before they come up. When they make their appearance, nothing more need be done than keeping them clear from weeds all summer and the winter following; and in the spring the strongest plants may be drawn out, and set in the nursery for a year, and then removed to the places where they are designed to remain; whilst the weakest, being left in the seed-bed one year more, may undergo the same discipline.

C E L T I S.

LINNEAN Class and Order, *Polygamia Monoecia*. Hermaphrodite flowers, containing five stamens and two pistils, and male flowers containing five stamens. There are three SPECIES.

1. *CELTIS Australis* : The SOUTHERN CELTIS, or the BLACK-FRUITED NETTLE-TREE, or LOTE-TREE ; a *deciduous tree* ; native of Africa and the South of Europe.

2. *CELTIS Occidentalis* : The WESTERN CELTIS, or the PURPLE-FRUITED or OCCIDENTAL NETTLE-TREE ; a *deciduous tree* ; native of Virginia.

3. *CELTIS Orientalis* : or the EASTERN CELTIS ; or YELLOW-FRUITED or ORIENTAL NETTLE-TREE ; a *deciduous shrub* ; native of Armenia.

1. The SOUTHERN CELTIS.

2. The WESTERN CELTIS.

These two species grow with large, fair, straight stems ; their branches are numerous and diffuse ; their bark is of a darkish grey colour ; their leaves are of a pleasant green, three or four inches long, deeply serrated ; end in a narrow point, nearly resemble the leaves of the common stinging-nettle, and continue on the trees till late in the autumn : So that one may easily conceive what an agreeable variety these trees would make. Add to this, their shade is admirable. The leaves are late in the spring before they shew themselves ; but they make amends for this, by retaining their verdure till near the close of autumn, and then do not resemble most deciduous trees, whose leaves shew their approaching fall by the change of their colour ; but continue to exhibit themselves of a pleasant green, even to the last.

HANBURY speaks highly of the Celtis as a timber-tree : he says, " The wood of the Lote-Tree is extremely durable. In Italy they make their flutes, pipes, and other wind instruments of it. With us the coach-makers use it for the frames of their vehicles." MILLAR mentions also the wood of the *Occidentalis* being used by the coach-makers.

The two species of Tree-Celtis are PROPAGATED from seeds, which ripen in England, if they have a favourable autumn ; but the foreign seeds are the most certain of producing a crop. These seeds should be sown, soon after they are ripe, either in boxes, or in a fine warm border of rich earth, a quarter of an inch deep ; and in the following spring many of the young plants will appear, tho' a great part often lie till the second spring before they shew their heads. If the seeds in the beds shoot early in the spring, they should be hooped, and protected by mats from the frosts, which would nip them in the bud. When all danger from frosts is over, the mats should be laid aside till the parching beams of the sun get powerful ; when, in the day-time, they may be laid over the hoops again, to screen the plants from injury. The mats should be constantly taken off every night, and the young plants should never be covered either in rainy or cloudy weather. During the whole summer, these seedlings should be frequently watered in dry weather, and the beds kept clean of weeds, &c. In the autumn, they must be protected from the frosts, which often come early in that season, and would not fail to destroy their tops. The like care should be continued all winter, to defend them from the same enemies. In this seminary they may remain, being kept clean of weeds and watered in dry weather, till the end of June, when they should be taken out of their beds, and planted in others at six inches distance. And here let no one (continues HANBURY) be startled at my recommending the month of June for this work ; for I have found by repeated experience, that the plants will be then almost certain of growing, and will continue their shoots till the autumn ; whereas I have ever perceived, that many of those planted in March have frequently perished, and that those which did grow made hardly any shoot that year, and shewed the early figure of a stunted tree. In June, therefore, let the ground be well dug, and prepared for this work ; and let the mould be rich and good : But the operation of removing must be deferred till rain comes ; and if the season should be dry, this work may be postponed till the middle of July. After a shower, therefore, or a night's rain, let the plants be taken out of their beds, and pricked out at six inches distance from each other. After this, the beds in
which

which they are planted should be hooped, and covered with mats when the sun shines ; but these must always be taken away at night, as well as in rainy or cloudy weather. With this management, they will have shot to a good height by the autumn, and have acquired so much hardiness and strength as to need no farther care than to be kept clear of weeds for two or three years ; when they may be planted out in places where they are to remain, or set in the nursery, to be trained up for large standards.

The best season for planting out these standard trees is the latter end of October, or beginning of November ; and in performing that operation, the usual rules must be observed, with care.

The soil for the Lote-tree should be light, and in good heart ; and the situation ought to be well defended, the young shoots being very liable to be destroyed by the winter's frosts.

3. The EASTERN CELTIS. The height to which this species will grow is no more than about twelve feet ; and the branches are many, smooth, and of a greenish colour. The leaves are smaller than those of the other sorts, though they are of a thicker texture, and of a lighter green. The flowers come out from the wings of the leaves, on slender footstalks : They are yellowish, appear early in the spring, and are succeeded by large yellow fruit.

The CULTURE of this species is the same, and the plants may be raised in the same manner as the other two sorts, only let this all along have a peculiarly dry soil, and a well-sheltered situation, otherwise it will not bear the cold of our winters.

CEPHALANTHUS.

LINNEAN Class and Order, *Tetrandria Monogynia* : Each flower contains four males and one female. There is only one SPECIES.

CEPHALANTHUS *Occidentalis* : The CEPHALANTHUS, or BUTTON-WOOD ; a *deciduous shrub* ; native of North America.

The

The *CEPHALANTHUS* grows to about five or six feet high. It is not a very bushy plant, as the branches are always placed thinly in proportion to the size of the leaves, which will grow more than three inches long, and one and a half broad, if the trees are planted in a soil they like. The leaves stand opposite by pairs on the twigs, and also sometimes by threes, and are of a light-green colour: Their upper surface is smooth; they have a strong nerve running from the footstalk to the point, and several others from that on each side to the borders: These, as well as the footstalks, in the autumn die to a reddish colour. The flowers, which are aggregate flowers, properly so called, are produced at the ends of the branches, in globular heads, in July. The florets which compose these heads are funnel-shaped, of a yellow colour, and fastened to an axis which is in the middle.

The PROPAGATION of the *Cephalanthus* is from seeds, which we receive from America. These should be sown as soon as they arrive, and there will be a chance of their coming up the first spring; though they often lie till the spring after before they make their appearance. They may be sown in good garden mould of almost any soil, if somewhat moist the better, and should be covered about a quarter of an inch deep. This shrub is also propagated by layers. If the young shoots are laid in the autumn, they will have struck good root by the autumn following, and may be then taken up, and set in the places where they are designed to remain. Cuttings of this tree, also, planted in the autumn in a rich, light, moist soil will grow: and by that means also plenty of these plants may be soon obtained.

C E R C I S.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower contains ten males and one female. There are only two SPECIES.

1. *CERCIS*

1. *CERCIS Siliquastrum* : The COMMON JUDAS-TREE, or the ITALIAN CERCIS ; a tall *deciduous flowering shrub* ; native of Italy and other parts of the South of Europe.

2. *CERCIS Canadensis* : The CANADIAN JUDAS-TREE, or the RED BUD, or the CANADIAN CERCIS ; a *deciduous flowering shrub* ; native of Canada, Virginia, and other parts of America.

1. The COMMON JUDAS-TREES differ in the height of their growth in different places : In some they will arrive to be fine trees, of near twenty feet high ; whilst in others they will not rise to more than ten or twelve feet, sending forth young branches irregularly from the very bottom. The stem of this tree is of a dark-greyish colour, and the branches, which are few and irregular, have a purplish cast. The leaves are smooth, heart-shaped, and roundish, of a pleasant green on their upper surface, hoary underneath, and grow alternately on long footstalks. The flowers are of a fine purple : They come out early in the spring, in clusters, from the side of the branches, growing upon short footstalks ; and in some situations they are succeeded by long flat pods, containing the seeds, which, in very favourable seasons, ripen in England. Some people are fond of eating these flowers in sallads, on which account alone in some parts this tree is propagated. The *varieties* of this species are, 1. The Flesh-coloured ; 2. The White-flowered ; and, 3. The Broad-podded Judas-tree.

2. CANADA JUDAS-TREE will grow to the size of the first sort in some places. The branches are also irregular. The leaves are cordated, downy, and placed alternately. The flowers usually are of a palish red colour, and shew themselves likewise in the spring, before the leaves are grown to their size. These too are often eaten in sallads, and afford an excellent pickle. There is a variety of this with deep red, and another with purple flowers. The pleasure which these trees will afford in a plantation may be easily conceived, not only as they exhibit their flowers in clusters, in different colours, early in the spring, before the leaves are grown to such a size as to hide them ; but from the difference of the upper and lower surface of the leaves ; the one being of a fine green, the other of a hoary cast ; so that on the same tree, even in this respect, is shewn variety ; an improvement where-
of

of is made by the waving winds, which will present them alternately to view.

As these species will not take root by layers, they must be PROPAGATED by seeds, which may be had from abroad. They are generally brought us sound and good, and may be sown in the months of February or March. Making any particular compost for their reception is unnecessary; common garden mould, of almost every sort, will do very well: And this being well dug, and cleared of all roots, weeds, &c. lines may be drawn for the beds. The mould being fine, part of it should be taken out, and sifted over the seeds, after they are sown, about half an inch thick. Part of the seeds will come up in the spring, and the others will remain until the spring following; so that whoever is desirous of drawing the seedlings of a year old to plant out, must not destroy the bed, but draw them carefully out, and after that there will be a succeeding crop. However, be this as it will, the seeds being come up, they must be weeded, and encouraged by watering in the dry season; and they will require no farther care during the first summer. In the winter also they may be left to themselves, for they are very hardy; tho' not so much but that the ends of the branches will be killed by the frost, nay, sometimes to the very bottom of the young plant, where it will shoot out again afresh in the spring. Whoever, therefore, is desirous of securing his seedling-plants from this evil, should have his beds hooped, in order to throw mats over them during the hard frosts. Toward the latter end of March, or beginning of April, the plants having been in the seed-bed one or two years, they should be taken out, and planted in the nursery: The distance of one foot asunder, and two feet in the rows, should be given them. Hoeing the weeds down in the summer must also be allowed, as well as digging between the rows in the winter. Here they may stand until they are to be removed finally; but they must be gone over in the winter with the knife, and such irregular branches taken off as are produced near the root; by which management the tree may be trained up to a regular stem. Such, continues HANBURY, is the culture of the species of *Cercis*; sorts that are not to be omitted where there are any pretensions to a collection. Besides, the wood itself is of great value; for it
polishes

polishes exceeding well, and is admirably veined with black and green.

CHIONANTHUS.

LINNEAN Class and Order, *Diandria Monogynia*: Each flower contains two males and one female. There are two Species: *CHIONANTHUS Zeylonica*; and

CHIONANTHUS Virginica: The SNOW-DROP-TREE, or the FRINGE-TREE, or the VIRGINIAN CHIONANTHUS; a tall *deciduous shrub*; native of Virginia and other parts of North America.

The SNOW-DROP-TREE. This shrub will grow to the height of about fifteen feet, and, until late years, was very rarely to be met with in our gardens. The stem of it is rough, and of a dark-brown colour. The leaves are large, shaped like a laurel, broad and roundish, of a fine deep green on their upper surface, but rather hoary. The flowers come out in bunches, in May, from every part of the tree: They are of a pure white; and, in the places where it grows naturally, this must be a most delightful plant; for at that season it exhibits its white flowers in bunches all over it, so as to resemble a tree covered with snow. The few trees we have seldom flower; and even when they do, the flowers are few, and make no great figure. Whoever is desirous of raising this shrub must plant it in a moist part of the garden, which is well defended with other trees; for there he will have a chance of seeing the flowers (which are succeeded by black berries, of a moderate size) in more plenty, and in greater perfection.

The CULTURE of this tree is not very easy; for if we attempt to propagate it by layers, these are with difficulty made to strike root; and if we obtain good seeds from abroad, great care and management must be used, to make them to be strong plants, fit to be set out to stand. By layers and seeds, however, this tree may be increased; and, 1. When layers is the method adopted, let the plants designed for stools be set in a very moist place,

place, where the soil is rich and good. After these stools have thrown out young shoots, they should be layered in the autumn. If there be many twigs of the summer's growth to be layered, different methods may be used on the different twigs; for no one particular method can be depended on, and yet they will grow by almost all. One time the layering has been performed by a small slit at the joint; another twig has had a gentle twist, so as to just break the bark; a third has been wired. The slit-layers, after three or four years, have only swelled to a knob, without any fibres; while the twisted parts have shot out fibres, and become good plants. At other times, the twisted part, after waiting the same number of years, has still remained in the ground as a branch without any root; whilst the slit-twig, in the mean time, has become a good plant. The like uncertainty has been found to attend the other manner of layering. To propagate the Snow-drop tree this way, every method should be used; and then there will be a greater chance of having some plants; but, at the best, you must not expect them with good roots, until they have lain in the ground about three years; for it is very rarely that they are to be obtained sooner. The layers should be taken from the stools the latter end of March, and planted in pots. These should be plunged into a hotbed; and, after they have struck root, should be used to the open air. In May they may be taken out, and plunged in the natural soil, in a moist shady place. When the frost comes on, they should be removed into the greenhouse, or set under a hotbed-frame for protection; and in the spring they may be turned out of the pots, with the mould, into the places where they are to remain, which ought to be naturally moist and well sheltered. 2. From seeds: they must be sown in large pots, about half an inch deep, in a strong sandy loam, plunging the pots into a moist shady place in summer, and in winter removing them into the greenhouse or under hotbed frames.

MILLAR says, "This shrub delights in a moist, soft, loamy soil; and is subject to decay in dry soils and hot seasons."

CISTUS.

C I S T U S.

LINNEAN Class and Order, *Polyandria Monogynia* : Each flower contains numerous males and one female. There are no less than forty-three SPECIES of this genus of plants, most of which are herbaceous, or herbaceous-shrubby ; of the thirteen arboresecent species, twelve are naturalized to this climate.

1. CISTUS *Populifolius* : The POPLAR-LEAVED CISTUS, or ROCK-ROSE ; an evergreen shrub ; native of Spain and Portugal.

2. CISTUS *Laurifolius* : The BAY-LEAVED CISTUS, or ROCK-ROSE ; an evergreen shrub ; native of Spain.

3. CISTUS *Ladaniferus* : The LADANUM CISTUS, or ROCK-ROSE ; an evergreen shrub ; native of Spain, Italy, Crete, and the South of France.

4. CISTUS *Incanus* : The HOARY CISTUS, or HOARY-LEAVED ROCK-ROSE ; a low evergreen shrub ; native of Spain and the South of France.

5. CISTUS *Monspeliensis* : The MONTPELIER CISTUS, or GUM CISTUS of MONTPELIER ; an evergreen shrub ; native of the South of France.

6. CISTUS *Albidus* : The WHITE CISTUS, or OBLONG WHITE-LEAVED ROCK-ROSE ; an evergreen shrub ; native of Spain, Portugal, and France.

7. CISTUS *Salvifolius* : The SAGE-LEAVED CISTUS, or ROCK-ROSE ; a low evergreen shrub ; native of France, Italy, and Sicily.

8. CISTUS *Crispus* : The CURLED CISTUS, or WAVED-LEAVED ROCK-ROSE ; an evergreen shrub ; native of Lusitania.

9. CISTUS *Halimifolius* : The HALIMUS-LEAVED CISTUS, or SEA-PURSLAIN-LEAVED ROCK-ROSE ; a low evergreen shrub ; grows common near the sea-shore in Spain and Portugal.

10. CISTUS *Villosus* : The SHAGGY-LEAVED CISTUS, or SPANISH ROUND-LEAVED ROCK-ROSE ; a low evergreen shrub ; native of Italy and Spain.

11. CISTUS *Creticus* : The CRETAN CISTUS, or ROCK-ROSE ; a low evergreen shrub ; native of Crete and Syria.

12. CISTUS

12. *Cistus Lissanotis* : The FRANKINCENSE CISTUS, or NARROW-LEAVED SPANISH ROCK-ROSE ; a low evergreen shrub ; native of Spain.

1. The POPLAR-LEAVED CISTUS is a shrub of about six feet in height, though it begins its bloom when lower than two feet. The branches have no regular way of growth, and are covered with a brown bark, which will be lighter or darker according to the different soils. The leaves are cordated, smooth, pointed, have footstalks, and a little resemblance to those of the Black Poplar. Old Botanists have distinguished two species of this sort, which they called the Major and the Minor, the one being of larger growth than the other ; but modern improvements shew these to be varieties only. The flowers are white, and produced about Midsummer, in plenty, at the ends and sides of the branches. They are of short continuance ; but there will be a succession kept up for near six weeks, during which time the shrub will have great beauty.

2. BAY-LEAVED CISTUS is an irregular branching shrub, of about the same height with the former. The leaves are oval, pointed, and in the Midsummer months are very clammy. Their upper surface is of a strong green, but their under is white, and they grow on footstalks which join together at their base. The flowers are produced from the ends and sides of the branches, about Midsummer. They are white, and stand on naked footstalks ; and being large, and produced in plenty at that time, make a good figure. This species is rather tender, and requires a warm, dry soil, and a well sheltered situation.

3. The LADANUM CISTUS is so called, because the Ladanum of the shops is collected from this shrub. There are many varieties of it differing in the colour of the flowers, or in some respect or other ; and the tree, with its varieties, will grow to be six or more feet high ; though it produces its flowers and exhibits great beauty when very low. It rises with a woody stem ; and tho' it produces its branches in no regular manner, yet it has the appearance of a well-fashioned shrub. The leaves are of a lanceolate figure. Their upper surface is smooth, and of a fine green colour, but their under is whitish and veined. They are scented ; and have footstalks that join together at their base. The flowers are very large and delicate, and are produced all over the shrub in plenty. They exhibit themselves about the usual time :

time : Many of them are of a pure white, with a deep purple spot at the bottom of each petal ; whilst others again from these afford a variety, being of a purple colour, or having their edges of a reddish tinge. The beauty of this tree, when in blow, is often over, in very hot weather, by eleven o'clock in the morning ; but that is renewed every day ; and for about six weeks successively a morning's walk will be rendered delightful by the renewed bounties which they bestow.

4. The HOARY CISTUS is a shrub of about four feet high, and forms itself into a bushy head. There are four or five varieties of this sort, that have been looked upon by some authors as distinct species ; but experience now teaches us better. The leaves of all are hoary ; but they differ often in shape, size or figure ; and this has occasioned their being named accordingly, and to be distinguished by the names of Common Hoary-leaved Cistus ; the Long-leaved Hoary Male Cistus : the Rounder-leaved Male Cistus ; the Large Hoary-leaved Male Cistus, &c. When these different sorts can be procured, they make the plantations more agreeable. The leaves of these sorts of Cistus sit close to the branches, are hairy, and rough on both sides. Their figure will be different on the same plant, and be produced in different manners : those on the tops of the branches are spear-shaped, and grow singly ; but the lower ones are oval, and joined together at their base. All of them are hoary, though some of the sorts are whiter than others ; and these leaves make a good contrast with the stronger greens during the winter months. These shrubs produce their flowers earlier than the other sorts ; they often shew some in May. They are of a purple colour, which, in different sorts, will be stronger or lighter. They fall away in the evening ; but are constantly renewed, for a month or longer, by a succession every morning.

5. The GUM CISTUS OF MONTPELIER is commonly of about four feet growth, though, like the others, it is very beautiful when no higher than one or two feet. The branches proceed from the bottom of the plant, in plenty ; they are hairy, tough, and slender. Their leaves are lanceolated, exude a very fragrant matter, are hairy on both sides, have three veins running lengthways, are of a dark-green colour, and sit close to the
I branches.

branches. The flowers are produced in their greatest plenty about Midsummer, and sometimes earlier, on long footstalks, at the ends of the branches. They are white, and the succession of the blow will be continued often longer than six weeks.

6. WHITE CISTUS will grow to be five or six feet high; and the younger branches, which will grow in an upright manner, are tough, and covered with a woolly substance. The leaves are oblong, very white, downy, trinervous, and sit close, surrounding the stalk at the base. The flowers are produced from the ends of the branches, at the beginning of June. They are large, of a fine purple colour, and look very beautiful.

7. The SAGE-LEAVED CISTUS is a much lower shrub, and the branches are many, spreading, and slender. The leaves resemble those of some of the sorts of sage-plants. They are oval, on both sides hairy, and have very short footstalks. The flowers are produced in June, from the wings of the leaves. They are white, and stand on naked footstalks; and though they are smaller than some of the other sorts, yet being produced all over the shrub, they make a fine show.

8. The CURLED CISTUS is of about four or five feet growth. The branches are very many, and spreading. The leaves are spear-shaped, waved, hairy, naturally bend backwards, and grow opposite by pairs on the branches. The flowers are produced from the wings of the leaves in June. Their colour is white. The succession will be kept up for a month, or longer.

9. The SEA-PURSLAIN-LEAVED CISTUS is a shrub of about four feet growth, and sends forth many branches in an upright pretty manner. The younger branches are downy, and the leaves have some little resemblance to the Sea-Purslain; though there are varieties of this species with broader and narrower leaves; some that approach to an oval, and others that are sharp-pointed. They grow opposite by pairs, and make a good variety by their white and hoary look. The flowers are produced in June and July on very long, naked footstalks, which support others also with shorter footstalks. They are of a fine yellow colour, and make a good figure when in blow. This is the most tender of all the sorts, and is generally treated as a greenhouse plant; but if the soil be naturally dry and warm, and the situation well-sheltered, it will do very well abroad in
our

our tolerably open winters. It may be adviseable, however, to secure a plant or two in the greenhouse, that, in case a very severe winter should happen to kill those abroad, a fresh stock may be raised from the thus-preserved plants.

10. SPANISH ROUND-LEAVED CISTUS. This is a branching shrub, of about a yard or four feet high. The leaves are oval, round, hairy, and placed on footstalks on the branches. The flowers come out in plenty from the tops and sides of the branches, in July. Their colour is purple; and though they are very fugacious, yet there will be a succession of them for a long time.

11. CRETAN CISTUS. This is a branching shrub, of about the same height with the former. The leaves are spatulated, oval, enervous, rough, and grow on footstalks on the branches. The flowers are red; and they make their appearance about the same time with the former.

12. SPANISH NARROW-LEAVED CISTUS. This rises with a shrubby, naked, purple-coloured stalk, to about four feet high. The leaves are narrow, light, reflexed on their sides, and grow opposite to each other without any footstalks. The flowers grow in small umbels, and come out from the ends and sides of the branches, on long slender footstalks. Their colour is white; and their appearance is about the same time with the former.

All the sorts of *Cistus* are PROPAGATED by seeds and cuttings.

1. Seeds is the best way, as by them the most handsome plants are produced, though they will not always afford so great a plenty of flowers as the plants raised from cuttings. When they are to be raised by seeds, a moderate hotbed should be in readiness for their reception by the beginning of March; and they should be sown in drills a quarter of an inch deep. A dry day should be made choice of for the purpose, and pegs should be stuck to shew the extremity of the drills. The drills may be made two inches asunder; and the bed being neated up, no other covering will be necessary than an old mat, to guard the plants, when coming up, from the spring frosts which may happen; for if the seeds are good, you may expect many plants to appear in less than a month; at which time they should be covered in the night, but be always kept uncovered in open and fine weather. As the dry weather comes on, they must be watered

moderately every other morning, and the weeds constantly cleared off; and as the summer heat encreases, the mats used to guard them from the frost in the night, must change their office: They must never come near them in the night, but only protect them from the scorching heat in the middle of the day. By the latter end of August many of the plants will be four or five inches high; when they may be thinned, and those drawn out either pricked in the nursery-ground, in beds at small distances, in well-sheltered places, or planted in pots, to be secured in the winter, and turned out at leisure. Of all the sorts, the Bay-leaved and the Sea Purslain-leaved species, with all their varieties, require this treatment. The rest are all very hardy. Those that are pricked out in rows in the nursery will immediately strike root: and, as well as those left in the old hotbed, if they are in well-sheltered places will do without any protection. If the place is not well defended, either by trees or hedges, it will be proper to prick some furze-bushes all around, to break the keen edge of the severe frosts. Those left in the old bed should be planted out in the spring in the nursery-ground; and in a spring or two after this, they should all be planted out where they are to remain; for none of these plants succeed so well if removed when grown old and woody. 2. These plants are easily raised by cuttings; and plants raised this way are often the best flowerers, though their manner of growth is not always so upright and beautiful. August is the month for this work; and if a dripping day happens in that month, it must be made choice of; if not, a bed of fine mould must be prepared, and the cuttings should be planted a few inches asunder; and after that should be watered to settle the mould to them. The beds should be hooped; and the next day, as the heat of the sun comes on, they should be covered with mats: This covering should be repeated, observing always to uncover them in the evenings, and also in moist and cloudy weather. These cuttings will take root in a very little time; and their after management may be the same as the seedlings.

C L E M A T I S.

LINNEAN Class and Order, *Polyandria Polygynia*: Each flower contains many males and many females. There are thirteen SPECIES, ten climbing, and three erect: Eight of the former have been introduced into this country.

1. CLEMATIS *Viticella*: The VIRGIN'S BOWER; a *deciduous climber*; native of Italy and Spain.

2. CLEMATIS *Viorna*: The VIRGINIA CLIMBER, or the PURPLE CLIMBER; a *deciduous climber*; native of Virginia and Carolina.

3. CLEMATIS *Crispa*: The CAROLINA CLIMBER, or the CURLED PURPLE CLIMBER; a *deciduous climber*; native of the East.

4. CLEMATIS *Orientalis*: The ORIENTAL CLIMBER; a *deciduous climber*; native of the East.

5. CLEMATIS *Vitalba*: The TRAVELLER'S JOY, or OLD MAN'S BEARD, or BIND-WITH; a *deciduous climber*; growing naturally in the hedges of England, and most of the northern parts of Europe; also in Virginia and in Jamaica.

6. CLEMATIS *Cirrbofa*: The EVERGREEN CLEMATIS, or EVERGREEN SPANISH CLIMBER; an *evergreen climber*; native of Spain and Portugal.

7. CLEMATIS *Flammula*: The CREEPING CLIMBER; a *deciduous climber*; native of the South of Europe.

8. CLEMATIS *Virginiana*: The SWEET-SCENTED CLEMATIS, or the SWEET-SCENTED AMERICAN CLIMBER; a *deciduous climber*; native of North America.

1. VIRGIN'S BOWER. Of this species of Clematis there are the following *Varieties*:

Double Purple Virgin's Bower.

Single Purple Virgin's Bower.

Single Blue Virgin's Bower.

Single Red Virgin's Bower.

Double Purple Virgin's Bower. This sort stands first on the list, not only because it is an admirable climber, but also is possessed of a large double flower. It will grow to the height

height of twenty or thirty feet, if supported ; and is very proper to cover arbours, as well as walls, hedges, &c. The branches are of a dark-brown or dusky colour, angular and channelled. The younger branches are of a fine green colour, and nearly square ; They are very numerous, and grow from the joints of the older ; and thus they multiply in that manner from the bottom to the top of the plant. The leaves also grow from the joints ; They are both compound and decompound *. The folioles, of which each is composed, are of an oval figure, and their edges are entire ; and in summer, when the plant is in full leaf, if set alone to form an arbour, after it is said to be grown strong, the branches and large leaves will be produced in such plenty, as not only effectually to procure shade, but even to keep off a moderate shower ; so excellently is this plant adapted to this purpose ; and more particularly so, as it will grow, when it has properly taken to the ground, fifteen or sixteen feet in one year. The flowers are double, and of a purple colour : They blow in July and August, and are succeeded by no seeds, the multiplicity of the petals entirely destroying the organs of generation.

The *Single Purple Virgin's Bower* is rather a stronger shooter than the Double, and will climb to rather a still greater height. The Double is only a sub-variety of this, which ought not to be neglected ; for this exhibits a fair flower, composed of four large petals, in the center of which are seated the numerous stamina.

The *Single Blue Virgin's Bower* produces its shoots, leaves, and flowers, in the same manner as the other ; and makes a variety only in that the flowers are of a blue colour.

The *Single Red* is of much lower growth, and seems of a more delicate and tender nature ; not but it is hardy enough to endure any weather ; but its shoots are weak, and short in proportion. They are angular, and channelled in the manner of the other ; but they are of a reddish colour. The leaves are smaller than the other sorts, and the flowers also are smaller, though they make a fine variety, by their colour being red. These all flower at the same time ; but are succeeded by no ornamental seeds.

* Doubly compound.

2. **VIRGINIA CLIMBER.** The branches are slender and numerous; and the leaves, as in the Virgin's Bower, are both compound and decompound. The folioles grow by threes, and these are often multiplied to form a decompound leaf of nine in number. They are nearly cordated, of a good green, and some of them are trifid. The flowers are produced in July and August, from the wings of the leaves. They are a kind of blue colour; and the petals (which are four in number), of which each is composed, are of a thick coriaceous substance. This sort will sometimes ripen its seeds in England.

3. **CAROLINA CLIMBER.** This is by some called the Curled-flowering Climber; and indeed by that name it is chiefly distinguished in our gardens. It is one of the lower kind of climbers; seldom arising, by the assistance of its claspers, to more than six feet. The stalks are very weak and slender. The leaves afford great variety, being sometimes trifoliate and sometimes single. The folioles also differ much; for some of them are found whole and entire, whilst others again are divided into three lobes. These leaves are of a dark-green colour, and are produced opposite, from the joints of the stalks. The flowers are produced in July and August, on short footstalks, below which a pair or more of oblong pointed leaves often grow. These flowers are composed of four thick, coriaceous, purple, curled petals. This species will for the most part produce ripe seeds in our gardens.

4. **ORIENTAL CLIMBER** is no great rambler; for, notwithstanding its slender stalks are well furnished with claspers, it is seldom found to climb higher than about ten feet. The leaves of this sort are compound. The folioles are cut angularly, and the lobes are shaped like a wedge. They are of a good green colour, and are very ornamental to the plant. The flowers are produced from the wings of the leaves early; for it will often be in blow in April. They are of a kind of yellowish-green colour, and the petals naturally turn backwards. These flowers differing in colour from the above sorts, and coming earlier in the spring, make it more desirable, as it testifies how many months in the summer are ornamented with the blow of some one or other species of Clematis. The seeds of this sort also will often ripen with us.

5. **TRAVELLER'S JOY** is a noble climber, and well known in many parts of England; the hedges where it abounds being frequently covered with it: But its greatest singularity is in winter; at which time it more peculiarly invites the traveller's attention. The branches of this species are very thick and tough, sufficient to make withs for faggots; and for this purpose it is always used in the woods where it can be got. These are so numerous, and produce side-branches in such plenty, which divide also into others, that they will over-top hedges, or almost any thing they can lay hold of to climb by. Besides the clasps with which it is furnished, the very leaves have a tendency to twine round plants. These leaves are pinnated; and a variety is occasioned by them; for the folioles of some sorts are indented at their edges, whilst others are found with their edges entire. They are of a bluish-green, and moderately large. The flowers are produced in June, July, and August, all over the plant, in clusters. They are succeeded by flat seeds, each of which, when ripe, is possessed of a white hairy plume, and growing in clusters will exhibit themselves in winter all over the tops of bushes, hedges, &c. which at that time will look beautiful and singular. This is the *Viorna* of old Botanists; and is called Traveller's Joy from its thus ornamenting hedges, bushes, &c. to the entertainment of the traveller.

6. **EVERGREEN CLEMATIS.** This is but a low climber, seldom growing higher than six or eight feet. The branches are very numerous, weak, and slender; but it rises by clasps, which naturally lay hold on any thing near them. The footstalks of the leaves, also, will twine round twigs, &c. so that they become clasps, and ensure the hold of the plant. Nay, if there be no hedge or plant near, by which they may hold and rise, they will twine among themselves; and as the branches are produced in great plenty, they will be so mixed one amongst another, as to form a low thicket, which makes this plant well adapted to produce variety in evergreen shrubbery-quarters, where, if planted singly, at a distance from other trees, it will naturally form itself into a thick bush. These leaves are sometimes cut into three lobes, sometimes into two, and many of them are undivided. The lobes when most perfect are nearly lanceolate, have their edges indented, and are of as fine a shining green as can be conceived.

ceived. The flowers are produced in the midst of winter, from the sides of the branches : They are of a greenish colour, though inclined to a white ; but the petals being pretty large, and blooming at that unusual season, makes this plant highly valuable.

7. CREEPING CLEMATIS, or *Flammula*, will mount by the assistance of other plants to a good height, sometimes near twenty feet. The stalks are slender and numerous ; and the leaves are in this respect singular ; for the lower ones are pinnated, and their edges are jagged ; but the upper ones grow single. They are of a lanceolate figure, and their edges are entire. The flowers of this species are exhibited in June, July, and August. They are white, and by some admired.

8. SWEET-SCENTED CLEMATIS. This sort will rise, by the assistance of neighbouring bushes and trees, to a great height. The branches are many, spread themselves all around, and lay hold of every thing that is near them. The leaves are ternate. The folioles are heart-shaped, angular, and nearly cut into three lobes. The flowers are white, and, being possessed of a most agreeable fragrance, render this climber highly proper for arbours, and to be stationed near seats and places of resort.

These are all the hardy climbing species of this genus yet known. The *varieties* of the first kind are notable, and afford as much diversity in a garden as if they were distinct species. The other sorts also admit of varieties ; but the difference is very inconsiderable, and makes little variety, as they nearly agree with some or other of the above sorts.

The PROPAGATION of all these sorts is by layers ; and this is best done in summer on the young shoots as they grow. As soon, therefore, as they have shot about a yard or four feet in length, let the ground be well dug about each stool, and made fine, and a gentle hollow made about a foot from the stool. In this hollow let the young shoots be pressed, and covered with mould, leaving their ends out to continue growing. In a very little time they will be a yard or more in length ; when a second hollow may be made, at a distance from the other, and the shoots pressed down and covered with mould as before, the ends being still left out to grow. On some of the long shooting sorts this may be repeated again, and even again ; and these shoots, thus

thus layered, will strike root. Many of the forts will have good root by the autumn; and others must be waited for until the autumn following. This summer-method of layering is highly necessary; because some of the forts, particularly the Virgin's Bower, if layered in winter in the common way, will be often two whole years, nay sometimes three, before they will strike root. Any time from autumn to spring the layers may be taken up; and from one stool some scores are often obtained. Those with good roots may be set out to remain; and every bit that has a fibre should be cut off below that fibre, and should be headed to one eye or joint above the part that had been out of the ground; and thus all the layers being collected together should be planted in the nursery at small distances, and in a year or two they also will be good plants for use.

The TRAVELLER'S JOY may be layered at any time, for the roots will easily strike; nay, they will grow by cuttings.

The EVERGREEN SPANISH CLIMBER requires no art or trouble to encrease it; for it will encrease itself if the ground is left undisturbed a year or two, and will throw out plenty of suckers, which will have roots, and be good plants.

C L E T H R A.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower containing ten males and one female. There is only one known SPECIES:

CLETHRA *Alnifolia*: The ALDER-LEAVED CLETHRA, or the AMERICAN ALDER; a *deciduous aquatic shrub*; growing naturally in Virginia, Carolina and Pennsylvania, like our Alder, by the sides of rivers and watery places.

The CLETHRA is shrub, with us, about four or five feet high, tho' in its native soil it is sometimes found so high as eight or ten feet. The branches it sends forth are not numerous; and these are garnished with leaves, which are spear-shaped and serrated.

serrated. They are about three inches long, an inch and a half broad, and have short footstalks. The *Clethra* usually flowers in July. The flowers are produced at the ends of the branches, in long spikes: They are white, and possessed of a strong scent. This plant, at present, is not very common in our gardens.

The CULTURE of this shrub is by layers, seeds, and suckers. 1. The plants designed to be encreased by layers should be set in the moistest part of the garden, and managed like those of the *CHIONANTHUS*. 2. By seeds,—which also should be sown and managed the same as *CHIONANTHUS*. 3. These shrubs will very often send out suckers, by which they may likewise be propagated. These may be taken off in the autumn, if they have good roots, and planted out in the nursery-way: if they have not, they should be let alone till March; then taken up, and planted in pots of good loamy soil, and afterwards plunged into a moderate warmth of dung; which will promote their growth. The autumn following they will be fit to be planted out to stand.

C N E O R U M.

LINNEAN Class and Order, *Triandria Monogynia*: Each flower contains three males and one female. There is only one SPECIES:

CNEORUM Tricocon: The CNEORUM, or WIDOW-WAIL: a low evergreen shrub; native of dry gravelly places in Spain, Italy, and France.

The CNEORUM, or WIDOW-WAIL, is a shrub of about a yard in growth, and is an excellent one for the front of evergreen quarters, where the lowest shrubs are to be placed. The wood of this tree is very hard, and the older branches are covered with a brown bark. The stem naturally divides into many branches; and the bark on the youngest is smooth, and of a pale-green colour. The leaves are smooth, of a fine dark-green colour, and constitute the greatest beauty of this shrub. They are of an oblong figure, and very long in proportion to the breadth:

They

They will be two inches or more long, and about half an inch in breadth. Their under surface is of rather a paler green than their upper, and their base joins to the young branches without any footstalk. The flowers are yellow, and make no great show. A healthy plant may be expected to be in blow most part of the summer. They grow from the wings of the leaves, towards the ends of the branches; and are succeeded by the seeds, which grow together by threes; which will be of a dark-brown or black when they are ripe.

CNEORUM may be PROPAGATED by seeds or by cuttings. 1. By seeds. These should be gathered in October, and be those which have grown from the first flowers of the shrub that summer, and which will be then black, or nearly so, if ripe. They should be sown, in a bed of common garden-mould made fine, about half an inch deep. One may expect to see the plants come up in the spring; though it often happens that the greatest part of them remain until the second spring before they appear. 2. These plants may be encreased by cuttings; but they never make such beautiful shrubs; neither is the method worth practising if seeds can be obtained. The cuttings may be planted in spring; then it will be necessary to set them in pots, and give them the assistance of an hotbed; and this will set them a-growing. The beginning of August is a very good time for planting these cuttings or slips. They should be planted in beds of good fine mould; and these should be hooped, and matted from nine o'clock in the morning until near sunset. Then they should be uncovered, and remain so in all cloudy and rainy weather. Most of these cuttings will grow; and there they may remain without removing until they are set out for good.

When these shrubs are to be planted out, the most dry and gravelly spots must be chosen for them; and in these places they will bid defiance to our severest weather; though in such a soil they will not grow so high as in a moist fat soil, by a foot or more, which is considerable in a shrub of such a natural low growth; but it is necessary for them to be planted in a dry or gravelly soil, because there they will be secure from injury by frosts.

C O L U T E A.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female, the males standing in two divisions. There are three SPECIES; one of which is herbaceous, and another a shrub, too delicate for the open air of this climate; the third has long been an ornament to the English garden.

COLUTEA *Arborescens*: The BLADDER-SENA; a well known *deciduous shrub*; native of the South of Europe, particularly about Mount Vesuvius.

The BLADDER-SENA sports in the following *varieties*; all of which are beautiful in their kind, and afford delight both by their flowers and leaves; viz. 1. The Common Bladder-Sena. 2. The Oriental Bladder-Sena. 3. Pocock's Bladder-Sena. 4. The Red-podded Bladder-Sena.

The *Common Bladder-Sena* is the tallest grower of all the sorts. It will arrive to the height of about ten or twelve feet. The branches are of a whitish colour, which distinguish it in the winter, and the leaves in the summer have a pleasing effect. They are pinnated; the folioles are oval, and indented at the top; they consist of sometimes four, sometimes five pair, placed opposite, and are terminated by an odd one. The flowers are of the butterfly kind: They are produced in June, July, and August, in clusters; are numerous, of a yellow colour, and the footstalk that supports them is long and slender. The flowers are succeeded by large inflated pods, like bladders, which catch the attention of those who have never before seen them. This tree has variety enough of itself to make it esteemed; but it should always be planted among other trees of the same growth, to break the force of the strong winds; not but that it is hardy enough to resist our severest winters, but the branches will easily split, which will make it unsightly, unless they are sheltered in some degree by other trees. This sort will ripen its seeds in the autumn.

The *Oriental Colusea* will grow to the height of about five or six feet. The branches of this tree also are greyish, and the leaves pinnated, as well as terminated by an odd one, and the lobes are obversely cordated and small. The flowers are reddish,
spotted

spotted with yellow, and grow from the sides of the branches on footstalks, each of which is formed sometimes with two, sometimes with three flowers. This tree is extremely hardy; and as it does not grow to the size of the common sort, nor in so luxuriant a manner, the branches will not be so liable to be split off by the winds; and therefore the precaution necessary for that, in this sort may be the less observed.

Pocock's Bladder-Sena is another variety, of lower growth than the common sort. The leaves are pinnated, and the folioles stand opposite by pairs in both the kinds. They are indented in the same manner at the top; neither can I perceive any other difference between this and the Common Bladder-Sena, only that the one is larger than the other, and the flowers come out earlier in the year.

The *Red-podded Bladder-Sena* is also a variety, which will happen in common to all the sorts, more or less, when raised from seeds.

These trees are all very easily PROPAGATED. 1. By seeds. Any time in the spring will do for the work, though the month of March is the best season; and no other compost will be required than garden-mould of almost any sort, dug and raked fine. If the seeds are sown about half an inch deep, they will come up like corn in a month or two after. Keep the beds weeded until the spring following; and then plant them out in the nursery-way, observing always to shorten the tap-root which they often have. In a year or two they will be good and proper plants for the shrubbery. 2. These trees may also be propagated by layers; and that is the method generally practised with Pocock's sort, to continue it in its low growth.

C O R N U S.

LINNEAN Class and Order, *Tetrandria Monogynia*: Each flower contains four males and one female. There are eight SPECIES; three of which are adapted to ornamental gardening.

1. *CORNUS Mascula*: The CORNELIAN CHERRY; a tall deciduous shrub; growing naturally in the hedges of Austria.

2. *CORNUS*

2. *CORNUS Sanguinea* : The COMMON DOGWOOD, or BLOODY-TWIG ; a *deciduous shrub* ; common in our hedges, and is natural to most parts of Europe, Asia, and America.

3. *CORNUS Florida* : The VIRGINIAN DOGWOOD, or FLOWERING CORNUS ; a *deciduous shrub* ; native of Virginia.

1. The CORNELIAN CHERRY will rise to twenty feet high. Its principal merit as an *ornamental* lies in its flowering early in the spring, and in exhibiting its beautiful scarlet berries in autumn. Its *uses* are held out as numerous. Its fruit was formerly in good esteem ; and its wood is said to be useful for wheel-work, pins, hedges, &c. It is arranged by EVELYN and HANBURY among Forest-trees.

2. The COMMON DOGWOOD is well-known all over England, as it grows naturally in most parts of the kingdom ; a few of these trees are nevertheless admissible into the shrubbery ; if they are not already too common in its neighbourhood ; for the young twigs are red, especially in winter, which look well at that season, as do also its flowers in the summer, and its leaves in the autumn. The redness of these young shoots has occasioned this sort to go by the name *Bloody-Twig*. The leaves are about two inches long, and an inch and a half broad : These have large nerves, which terminate in a point, and they often die in the autumn to a reddish colour. The flowers are white, produced in umbels at the ends of the branches, and are succeeded by black berries, like those of the Buckthorn, but have in each only one stone. The wood, it is said, makes the best kind of charcoal in the world for gunpowder. It is brittle, exceedingly white, and when growing is covered with a dark-brown bark, the twigs being red.

3. VIRGINIAN DOGWOOD will grow rather higher than our Common Dogwood. The twigs are of a beautiful red. The leaves are obversely cordated. The flowers are produced in large bunches somewhat like those of the Elder : Their colour is white ; they come out in May and June, and the berries ripen in autumn.

From these species, the following beautiful *varieties* figure in our nurseries ; viz. Female Virginian Dogwood ; American Blue-berried Dogwood ; White-berried Dogwood of Pennsylvania ; and Swamp Dogwood.

Female

Female Virginian Dogwood, during the winter months, exhibits its branches of so beautiful a red colour, as to distinguish itself to all at that season. It grows to eight or ten feet high; the leaves are somewhat spear-shaped, acute, nervous, and in the autumn die to a fine red. The flowers come out in umbels, at the ends of the branches: They appear in May and June, and the berries ripen in the autumn.

The *American Blue-berried Dogwood* arrives at the height of about eight or nine feet. The twigs of this tree also are of a delightful red. The leaves are large, oval, and hoary on their under-side. The flowers are white, come out in umbels from the extremity of the branches, and are succeeded by large, oval, blue berries, which make a fine appearance in the autumn.

White-berried Dogwood arrives at the same size with the others. The young shoots, like those of the former, are of a beautiful red colour during the winter. Like them, also, it produces its white flowers in large umbels in May; but they are succeeded by white berries in the autumn.

Swamp Dogwood grows naturally in moist places, almost all over America; and it will grow with us in almost any soil or situation. The leaves of this are of a much whiter colour than any of the other sorts; though the flowers and fruit are produced in the same manner.

One method of PROPAGATION is common to all these sorts of *Cornus*; though this may be effected three ways; by seeds, layers, and cuttings. 1. The seeds of the common sort should be sown in the autumn, soon after they are ripe; and these will come up in the spring. The seeds of the American sorts we generally receive in the spring: These should be sown directly; but they will not come up till the spring following; nor would those of our common sort, if they were kept until the spring before they were sown. No particular art is required for these seeds. They will grow in common garden-mould of almost any sort, though the richer it is the better. This must be made fine, cleared of all roots, weeds, &c. and the seeds should be sown about half an inch deep. The spring after the plants come up, they should be planted in the nursery, at a small distance from each other, where they may stand for two or three years, and then be planted out to stand. 2. These trees may be easily propagated by layers; for after having obtained
some

some plants for the purpose, if the shoots that were made the preceding summer be only laid in the ground in the autumn, they will have good roots by the autumn following. These may be taken off, and planted in the nursery for a year or two, as the seedlings; and the stools being cleared of all straggling branches, and refreshed with a knife, they will make strong shoots' for a second operation by the autumn next ensuing. 3. By cuttings likewise these sorts may be propagated. This work should be done in October; and the cuttings for the purpose should be the strongest part of the last year's shoot, that had shot vigorously from a healthy soil. If these are cut into lengths of about a foot long, and planted in a moistish soil, three parts deep, they will grow, and make good shoots the summer following; and these will require no removing before they are planted out finally.

C O R I A R I A.

LINNEAN Class and Order, *Diœcia Decandria*: Male flowers containing ten stamina, and female flowers containing five pistils upon distinct plants: There are two SPECIES; one of which will bear the open air of this climate.

CORIARIA *Myrtifolia*: The MYRTLE-LEAVED SUMACH, or TANNER'S SUMACH; a *deciduous shrub*; grows naturally about Montpellier in France, where it is said to be used by the tanners in tanning of leather.

The MYRTLE-LEAVED SUMACH is a shrub of lowish growth, seldom arriving to more than four or five feet high. The bark is of a greyish colour, and spotted. The wood is very brittle, and very full of light pith. The young shoots are produced in great plenty from the bottom to the top: They are square, and come out three or four together, from one side of the stem, whilst the other side is often furnished with an equal number. The leaves resemble some of the sorts of Myrtle, which gave occasion for its being called the Myrtle-leaved Sumach: They are oblong, pointed, of a bright-green, and stand opposite by pairs on the twigs. The flowers grow in spikes, at the ends and

sides of the branches, and have little beauty to recommend them. The tree is planted, however, as a flowering shrub, amongst others of its own growth; but the place in which it is set should be well sheltered; for notwithstanding this is a very hardy shrub, yet the ends of the branches are often killed in the winter, which makes the plant unsightly in the spring.

The PROPAGATION of the *Coriaria* is very easy. No other art need be used, than, after having obtained a few plants, to plant them in a lightish soil of any sort. Here they will propagate themselves in great plenty; for they will (what gardeners call) *spawn*; i. e. their creeping roots will send forth many young plants, at more than three yards distance from the real plant. The strongest of these may be taken up, and planted where they are to remain, whilst the weaker may be set in the nursery-way, to gain strength, before they are set out for good. In this easy manner may plenty of these shrubs be obtained; and every winter after they are taken up, if the mould about the mother-plant be raked smooth, and weeded in summer, she will afford you a fresh crop by the autumn following, which may be taken off and planted as before.

C O R O N I L L A.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female, the males being divided at the base into two sets. There are eleven SPECIES; two of them herbaceous, the rest of a ligneous nature; but only one of them has been introduced into our shrubberies.

CORONILLA *Emerus*: The SCORPION SENA, or JOINTED-PODDER COLUTEA; a deciduous shrub; native of the South of Europe.

The SCORPION SENA sends out numerous irregular branches from the root and on all sides; the oldest and most woody of which are of a greyish colour, whilst the youngest are smooth, and of a dark-brown. The leaves are pinnated, and constitute a great beauty in this shrub, being of a pleasant green, and are composed of three pair of folicles, which are terminated by an odd

odd one; these stand opposite on the midrib, and each has an indenture at the top. These leaves, by a proper fermentation, will afford a dye nearly like that of indigo. However, beautiful as the leaves are, it is the flowers which constitute the beauty of these shrubs; and, indeed, of all the shrubby tribe, there is none more striking or pleasing than this when in full blow. This usually happens in May; when it will be covered all over with bloom, the shrub itself appearing as one large flower divided into many loose spikes; for the flowers come out all along the sides of the branches by the leaves, on long footstalks, each supporting two or three flowers, which are butterfly-shaped, of a yellowish colour, and large in proportion to the size of the shrub. They are succeeded by longish pods, in which the seeds are contained. This shrub often flowers again in the autumn.

There is a *variety* of lower growth, called *Dwarf Scorpion Sca.*

This beautiful shrub is very readily PROPAGATED, either by seeds, layers, or cuttings; any of which may be easily made to grow. 1. By seeds. These should be sown, in the spring, in beds of common garden-mould made fine, and cleared of the roots of all weeds, &c. They should be covered about half an inch deep; and, if a very dry spring does not ensue, they will be up in about a month or six weeks. If this should happen, the beds must be now and then watered, and shaded from the heat of the sun, which sometimes is very intense and parching, even at the beginning of May. They may stand in the seed-bed two years before they are taken up; all which time they will want no other care than weeding; and if they have watering the first summer, should it prove a dry one, they will grow the faster. After this, they may be taken out of the seed-bed, planted in the nursery-way, and in about two or three years will be good plants to join in the shrubbery. 2. By layers. This business may be performed any time in the winter; but as the shrub sends forth numerous branches, many of them should be taken off, and only such a number left, as that they may be laid into the ground without crowding one another. The branches should be of the last year's shoot; and the operation should be performed by a gentle twist, so as just to break the bark; for, says HANBURY, without this I have found them in the autumn just as they were when layered; and with this, they have always

struck root; so as to be fit to take off the winter following. These layers should be planted out in the nursery; and after having stood about two years, they also will be grown to be good plants. 3. By cuttings. The cuttings should be the strongest of the last year's shoots. They should be planted close, in October, in a shady border of good fine mould. If the spring and summer prove dry, watering must be afforded them every other day; and by this means many plants may be raised. If the cuttings are planted close, and most of them grow, they should be thinned, by taking up so many as may leave the others at a foot or more asunder; and these plants also, thus taken up, should be set out in the nursery-ground a foot asunder, in rows at a foot and a half distance; where they may stand until they are finally taken up.

C O R Y L U S.

LINNEAN Class and Order, *Monoecia Polyandria*: Male and female flowers upon the same plant: The males, containing ten stamina each, are collected in cylindrical catkins; the females, containing two pistils each, issue from the point of the leaf-bud: There are two SPECIES.

1. *CORYLUS Avellana*: The HAZEL; a well-known tall deciduous shrub; very common in this country, and in most parts of Europe.

2. *CORYLUS Colurna*: The BYZANTINE NUT, or DWARF NUT TREE; a low deciduous shrub; growing naturally near Constantinople.

The HAZEL will grow to twenty feet high and upwards. A particular description of it here would be superfluous. LINNEUS considers the various kinds of FILBERTS as *Varieties* of the common Hazel, improved by culture. MILLAR was of a different opinion: he says, "I have several times propagated both from the nuts, but never have found them vary from the other, though they have altered in the size and colour of their fruit from the sorts which were sown;" he therefore divides them into two distinct species: But HAMBURY on the other hand says, that

that they "are varieties only of the same species; for I have planted the nuts of all the sorts, and sorts of all kinds have been produced from them." (Page 111.) As an *Ornamental*, the Hazel is of an inferior class; nevertheless, in reclusive quarters, the Filbert may be introduced with propriety: the idea of utility associated with that real ornament which is undoubtedly given by the various tints of the leaves of the different kinds and colours of Filberts, may probably afford more real satisfaction, especially to the owner, than the transient glare of a useless exotic. Be this as it may, the Hazel in point of *use* stands high; as an underwood it has no superior: indeed, the Oak and Ash excepted, the husbandman knows not so useful a wood as the Hazel. For stakes, edders and withs it is in use every where. In Surry, Kent, and other southern counties where numerous flocks of sheep are kept, the Hazel alone supplies the farmer with folding-hurdles; and in Yorkshire and other parts of the North of England, from whence great quantities of butter are sent to the London market, the hoops or firkin-rods are gathered almost wholly from this useful shrub.

2. The *BYZANTINE NUT*. This is distinguished from the other species chiefly by the stipulæ, which are very narrow and acute, whereas those of the common nut are oval and obtuse. It differs also in the size of its growth, the true Bizantine Nut-tree seldom growing higher than four or five feet; and hence the name *Dwarf Nut-tree* has been used for this plant. In other respects, it is like our common nut-tree; it flowers at the same time, the fruit is produced in clusters, and it ripens accordingly.

The method of PROPAGATING the Hazel kind is from seeds, by layering, or from the suckers, which it spontaneously sends up in great plenty. The *Nuts* should be sown about two inches deep, in February; until which time they should be kept in a cool, moist place to prevent the kernels from becoming dry and shrivelled, yet sufficiently airy to prevent their growing mouldy. The *Varieties* are best preserved by layering; for which purpose a few plants should be procured of the most valuable kinds, and planted for stools. They will grow on almost any soil; and the young twigs being laid in the ground in the autumn, will have struck root by the autumn following. These should be taken off, and planted in the nursery, a foot

asunder, and two feet distant in the rows ; and if there be any young shoots made the intermediate summer, they also may be laid down, or the plant headed within half a foot of the ground, to send forth young shoots for a second operation the autumn following. By this means the sorts may be propagated, and kept distinct ; for the seeds sown of any of them will not in general come to good ; though it is observable, that from the best nuts there will be the best chance of having good nuts again ; and “ I have (says HANBURY) sometimes known some few trees, raised from seeds, which have produced nuts better than those they were raised from. This may, perhaps, induce a gardener desirous of obtaining a great variety to try this method, when he may extirpate the worst sorts, and, if any should be worthy of it, may propagate the others in the manner directed.”

C R A T Æ G U S.

LINNEAN Class and Order, *Icosandria Digynia* : Each flower contains about twenty males and two females : There are ten SPECIES ; eight of which add considerable beauty to the modern garden.

1. CRATÆGUS *Oxicanthus* : The HAWTHORN, or WHITE THORN ; a well-known *deciduous tree or shrub* ; common with us, and growing naturally all over Europe.

2. CRATÆGUS *Azarolus* : The AZAROLE ; a *tall deciduous shrub* ; native of Italy and the South of France.

3. CRATÆGUS *Aria* : The WHITE LEAF ; or the WHITE BEAM, or the ARIA, or the ARIA THEOPHRASTI ; a *deciduous tree or shrub* ; grows naturally upon the hills of Kent and Surry, particularly near Box-hill ; and in most of the cold parts of Europe.

4. CRATÆGUS *Forminalis* : The WILD SERVICE, or the MAPLE-LEAVED SERVICE TREE ; a *deciduous tree* ; native of England, Germany, Switzerland, and Burgundy.

5. CRATÆGUS *Coccinea* : The VIRGINIA AZAROLE ; a *tall deciduous shrub* ; native of Virginia and Canada.

6. CRA.

6. *CRATÆGUS Crus Galli* : The COCKSPUR HAWTHORN ; a tall deciduous shrub ; native of Virginia.

7. *CRATÆGUS Tomentosa* : The GOOSEBERRY-LEAVED VIRGINIA HAWTHORN ; a deciduous shrub ; native of Virginia.

8. *CRATÆGUS Viridis* : The GREEN-LEAVED VIRGINIA HAWTHORN ; a deciduous shrub ; native of Virginia.

1. The HAWTHORN, in the state in which we are used to observe it, is nothing better than a tall, uncouth, irregular shrub ; but trained up as a standard, it swells to a large timber size, with a tall stem and a full spreading head ; though we believe it seldom rises to a great height ; perhaps not often so high as thirty feet. We have measured the stem of a youthful thriving Hawthorn eight feet high, and five feet and a half in circumference, with a head proportionable. Mr. Marshall * mentions one near Bethel-Church, in the neighbourhood of Norwich, which, at four feet high, girted, in the year 1755, nine feet one inch and a quarter, one of its arms extending more than seven yards. The Standard Hawthorn, whether we view its flowers in the spring, its foliage in the summer, or its fruit in the autumn and winter, is one of the most ornamental plants, standing singly, that can be scattered over a park or lawn. Its uses will be explained when we come to treat of HEDGES.

In order to PROPAGATE a quantity of *Quick*, one method is generally practised ; namely, first burying the haws, and taking them up to sow the October following ; though, says HANBURY, there is another way more preferable ; namely, to prepare the beds, and sow the haws soon after they are gathered. Whoever pursues the former method, having gathered what quantity of haws will answer his purpose, should in some by-corner of the kitchen-garden or nursery dig an hole or pit capacious enough to receive them ; some of the earth which came out of the hole, after the haws are put in it, should be laid upon them ; and, being thus carefully covered down, they may remain there till October. Then, having ground well dug, and cleared of the roots of all troublesome weeds, and the mould being fit for working, the beds should be made for the haws. Four feet is a very good width for these beds, as they may be

* Of Norfolk, in a Letter published in the First Volume of the Papers of the Bath Agriculture Society.

easily reached over to be weeded; and if the alleys between be each one foot and a half wide, they will be of a good size. The beds being marked out with a line, sufficient mould must be raked out to cover the haws an inch and a half deep. This being done, and the bottom of the beds being made level and even, the haws should be sown, and afterwards gently tapped down with the back of the spade; and then the fine mould, which had been raked out of the beds, must be thrown over them, covering them an inch and a half deep. In the spring the plants will come up, and in the summer following should be kept clear of weeds; though it does sometimes happen, that few of them will appear till the second spring after sowing. Sometimes the young plants are planted out from the seed-beds at one, two, or three years old; but the best plants are obtained by transplanting them into fresh mould the first or second year, letting them remain in the nursery two or three years longer. The practice of the London Nurserymen is this: The strongest of the seed-bed plants having been drawn at two or three years old for sale, they clear the beds entirely by drawing the remaining weak underling plants, and transplanting them into fresh beds in this manner (which they call *bedding* them): The ground having been trenched, and the tips of the plants as well as the lower fibres of their roots having been taken off with a sharp knife, they strain a line along one side of the bed; and, by chopping with a spade by the side of the line, leave a cleft or drill, of a depth proportioned to the length of the plants to be laid in; and, drawing the loose mould somewhat towards them, leave the side of the drill next to the line with a smooth polished face. Against this face the plants are set up, leaning towards the line, about three inches asunder, leaving their heads about an inch above the mould, and placing their roots at such a depth as to bury their stems from two to three inches deeper than they stood in the seed-bed. The loose mould being returned and pressed gently to the roots with the foot, the line is removed, and another row planted in the same manner, about a foot from the first.

The Common Hawthorn sports in the following *Varieties*:

The Large Scarlet Hawthorn,

The Yellow Hawthorn.

The White Hawthorn.

The

The Maple-leaved Hawthorn.

The Double-blossomed Hawthorn.

The Glastonbury Thorn.

The Large Scarlet Hawthorn is no more than a beautiful variety of the Common Haw. It is exceedingly large, oblong, perfectly smooth, and of a bright scarlet; and, from the additional splendor it acquires by the berries, it is propagated to cause variety in plantations for observation and pleasure.

Yellow Haw is a most exquisite plant. The buds, at their first coming out in the spring, are of a fine yellow, and the fruit is of the colour of gold. The tree is a great bearer, and retains its fruit all winter, causing a delightful effect in plantations of any kind. It was originally brought from Virginia, is greatly admired, and no collection of hardy trees should be without it.

White Haw is but a paltry tree, compared with the former. It hardly ever grows to the height of the Common Hawthorn, is an indifferent bearer, and the fruit is small, and a very bad white.

Maple-leaved Hawthorn will grow to be near twenty feet high, and has very few thorns. The leaves are larger than the Common Hawthorn, resemble those of the Maple, and are of a whitish-green colour. The flowers are produced in large bunches, in June, and are succeeded by remarkable fruit, of a shining red, which looks beautiful in the winter.

Double-blossomed Hawthorn produces a full flower, and is one of the sweetest ornaments in the spring. Nature seems to have peculiarly designed this sort for the pleasure-garden; for though it be the Common Hawthorn only, with the flowers doubled, yet it may be kept down to what size the owner pleases; so that it is not only suitable for wilderness-quarters, shrubberies, and the like, but is also useful for small gardens, where a tree or two only are admitted. These beautiful double flowers come out in large bunches in May, and the tree is so good a bearer, that it will often appear covered with them. Their colour, at their first appearance, is a delicate white: They afterwards die to a faint red colour, and are frequently succeeded by small imperfect fruit.

Glastonbury Thorn differs in no respect from the Common Hawthorn, only that it sometimes flowers in the winter. It is said to have originally been the staff of Joseph of Arimathea, that

that noble counsellor who buried Christ. He, according to the tradition of the abbey of Glastonbury, attended by eleven companions, came over into Britain, and founded, in honour of the Blessed Virgin, the first Christian Church in this isle. As a proof of his mission, he is said to have stuck his staff into the ground, which immediately shot forth and bloomed. This tree is said to have blossomed on Christmas-Day ever since, and is universally distinguished by the name of the Glastonbury Thorn. HANBURY says, I have many plants that were originally propagated from this thorn; and they often flower in the winter, but there is no exact time of their flowering; for in fine seasons they will sometimes be in blow before Christmas, sometimes they afford their blossoms in February, and sometimes it so happens that they will be out on Christmas-Day.

2. L'AZAROLE. The Azarole Thorn will grow to be fifteen or sixteen feet high. The leaves are large, nearly trifid, serrated and obtuse. The flowers are large, come out in May, and, in the different varieties, are succeeded by fruit of different size, shape, and relish.

The principal varieties of this species are, The *Azarole with strong thorns*; the *Azarole with no thorns*; the *Jagged-leaved Azarole*; the *Oriental Medlar*.

3. The WHITE LEAF. The *Aria Theophrasti*, called the White-leaf-tree, will grow to be more than twenty feet high. This tree is engaging at all times of the year, and catches the attention, even in the winter; for then we see it stand, though naked of leaves, with a fine strait stem, with smooth branches, spotted with white, at the end of which are the buds, swelled for the next year's shoot, giving the tree a bold and fine appearance. In the spring the leaves come out of course, and look delightfully, having their upper surface green, and the lower white. Their figure is oval; they are unequally serrated, about three inches long, and half as wide. Several strong nerves run from the mid-rib to the border, and they are placed alternately on the branches, which appear as if powdered with the finest meal. The flowers are produced at the end of the branches, in May; they are white, grow in large bunches, having mealy footstalks, and are succeeded by red berries, which will be ripe in autumn.

4. The

4. **THE WILD SERVICE.** The Maple-leaved Service is a large-growing tree. It will arrive to near fifty feet, and is worth propagating for the sake of the timber, which is very white and hard. This tree grows naturally in several woods in England; and it is the fruit of this species that is tied in bunches, and exposed for sale in the autumn: It is gathered in the woods, and by some persons is much liked. The leaves in some degree resemble those of the Maple-tree in shape; their upper surface is a fine green, their under hoary; and they grow alternately on the branches. The flowers come out in May, exhibiting themselves in large clusters at the ends of the branches: They are white, and are succeeded by the aforesaid eatable fruit, which, when ripe, is of a brown colour, and about the size of a large haw.

5. **VIRGINIAN AZAROLE.** This species will grow to be near twenty feet high. The stem is robust, and covered with a light-coloured bark. The branches are produced without order, are of a dark brown colour, and possessed of a few long sharp thorns. The leaves are spear-shaped, oval, smooth, and serrated; of a thickish consistence, and often remain on the tree the greatest part of the winter. Each separate flower is large; but as few of them grow together, the umbels they form are rather small. They come out in May, and are succeeded by large dark-red-coloured fruit, which ripens late in the autumn.

The varieties of this species are, The *Pear-leaved Thorn*; the *Plum-leaved Thorn with very long strong spines and large fruit*; the *Plum-leaved Thorn with short spines and small fruit*.

6. **COCKSPUR HAWTHORN.** The Virginian Cockspur Thorn will grow to about twenty feet high. It rises with an upright stem, irregularly sending forth branches, which are smooth, and of a brownish colour, spotted thinly with small white spots. It is armed with thorns, that resemble the spurs of cocks, which gained it the appellation of Cockspur Thorn. In winter, the leaf-buds appear large, turgid, and have a bold and pleasant look among others of different appearances. In summer, this tree is very delightful. The leaves are oval, angular, serrated, smooth, and bend backwards. They are about four inches long, and three and a half broad; have five or six pair of strong nerves

nerves running from the midrib to the border; and die to a brownish-red colour in the autumn. The flowers are produced in very large umbels, making a noble show, in May; and are succeeded by large fruit, of a bright red colour, which have a good effect in the winter.

The principal varieties of this species are, The *Cockspur Hawthorn with many thorns*; the *Cockspur Hawthorn with no thorn*; the *Cockspur with eatable fruit*. The latter was sent me, says HANBURY, from America with that name, and I have raised some trees of the seed; but they have not yet produced any fruit, so that I cannot pretend to say how far it may be desirable; though I have been informed it is relished in America by some of the inhabitants there.

7. GOOSEBERRY-LEAVED VIRGINIA HAWTHORN. This species grows to about seven or eight feet high. The branches are slender, and closely set with sharp thorns. The leaves are cuneiform, oval, serrated, and hairy underneath. The flowers are small, and of a white colour: They are produced from the sides of the branches, about the end of May; and are succeeded by yellow fruit, which ripens late in autumn.

There is a variety of this, called the *Carolina Hawthorn*, which has longer, and whiter leaves, larger flowers and fruit, and no thorns.

8. GREEN-LEAVED VIRGINIA HAWTHORN. The stem and branches of this species are altogether destitute of thorns. The leaves are lanceolate, oval, nearly trilobate, serrated, smooth, and green on both sides. The flowers are white, moderately large, come out the end of May, and are succeeded by a roundish fruit, which will be ripe late in the autumn.

The respective species are all PROPAGATED by sowing of the seeds; and the varieties are continued by budding them upon stocks of the White Thorn. This latter method is generally practised for all the sorts; though, when good seeds can be procured, the largest and most beautiful plants are raised that way. 1. In order to raise them from seeds, let these be sown soon after they are ripe, in beds of fresh, light, rich earth. Let alleys be left between the beds, for the convenience of weeding, and let the seeds be covered over with fine mould, about an inch deep.

The

The summer following, the beds must be kept clean of weeds, and probably some few plants will appear : But this is not common in any of the sorts ; for they generally lie till the second spring after sowing before they come up. At the time they make their appearance they must be watered, if the weather proves dry ; and this should be occasionally repeated all summer. They should also be constantly kept clean from weeds ; and in the autumn the strongest may be drawn out, and set in the nursery-ground, a foot asunder, in rows that are two feet distant from each other ; while the weakest may remain until another year. During the time they are in the nursery, the ground between the rows should be dug every winter, and the weeds constantly hoed down in the summer ; and this is all the trouble they will require until they are planted out for good, which may be in two, three, or more years, at the pleasure of the owner, or according to the purposes for which they are wanted. 2. These trees are easily propagated by budding also ; they will all readily take on one another ; but the usual stocks are those of the Common Hawthorn. In order to have these the best for the purpose, the haws should be got from the largest trees, such as have the fewest thorns and largest leaves. After they are come up, and have stood one year in the seed-bed, the strongest should be planted out in the nursery, a foot asunder, and two feet distant in the rows ; and the second summer after, many of them will be fit for working. The end of July is the best time for this business ; and cloudy weather, night and morning, are always preferable to the heat of the day. Having worked all the different sorts into these stocks, they may be let alone until the latter end of September, when the bafs matting should be taken off. In the winter the ground between the rows should be dug, and in the spring the stock should be headed about half a foot above the bud. The young shoots the stocks will always attempt to put out, should be as constantly rubbed off ; for these would in proportion starve the bud, and stop its progress. With this care, several of the sorts have been known to shoot six feet by the autumn ; and as they will be liable to be blown out of their sockets by the high winds which often happen in the summer, they should be slightly tied to the top of the stock that is left on for the purpose, and this will help to preserve them.

C U P R E S S U S.

LINNEAN Class and Order, *Monoecia Monadelphbia* : Male flowers containing four stamens connected at the base, and female flowers containing many pistils ; the males being disposed in oval catkins ; and the females, collected in roundish cones upon the same plant. There are five SPECIES (one of them lately discovered in Japan) :

1. CUPRESSUS *Sempervirens* : The COMMON CYPRESS ; a *deciduous tree* ; native of Italy, Spain, Portugal and Crete.

2. CUPRESSUS *Thyoides* : The AMERICAN CYPRESS ; or the ARBOR-VITÆ-LIKE CYPRESS, or the SMALL BLUE-BERRIED CYPRESS ; an *evergreen tree or shrub* ; native of Maryland and Canada.

3. CUPRESSUS *Juniperoides* : The AFRICAN CYPRESS, or the JUNIPER-LIKE CYPRESS, or the CAPE CYPRESS ; a *deciduous tree or shrub* ; native of the Cape of Good Hope.

4. CUPRESSUS *Disicha* : The DECIDUOUS CYPRESS ; a *deciduous tree* ; native of North America.

1. The COMMON CYPRESS. There are two striking *varieties* of this plant (MILLAR makes them two distinct SPECIES) ; namely,

The Upright or Female Cypress, and
The Spreading or Male Cypress.

There is also a third *variety* (which the same professional writer considers likewise as a distinct species) ; namely,

The Small-fruited Cypress.

The *Upright Cypress* is a most elegant plant, and, notwithstanding it has of late years been somewhat unfashionable, it certainly merits a place amongst *ornamental* evergreens. Its conical, or rather somewhat obeliscal, form makes an agreeable variety with fuller-headed plants. It aspires to a considerable height, though we believe it seldom swells to a large girth. However, EVELYN and HANBURY speak of this kind of Cypress

as a timber-tree ; but both of them seem to give preference to

The Spreading Cypress. This grows with a fuller and less regular head than the upright sort. MILLAR tells us, that in the Levant this is the common timber ; and recommends the planting of it in England very strongly ; especially upon hot, sandy, or gravelly soils.

The Small-fruited Cypress is still more spreading than the other, and produces its boughs in an irregular manner. If it is not crowded by other trees, and is left to nature, it will be feathered from the top to the bottom. It will grow to about the height of the Common Cypress, and is a sort that looks well if planted singly on grass-plats, &c. as well as when assisting to form clumps, or larger quarters of evergreens.

2. AMERICAN CYPRESS. This is the lowest grower of all the sorts with us ; though in America, where it grows naturally, it arrives to timber, which serves for many excellent purposes. The tallest of these trees seldom rise much higher than fifteen feet ; and as this tree is encreased by cuttings, those plants raised this way seldom rise higher than about nine or ten feet. The branches stand two ways, and are pretty numerous ; and the tree naturally forms itself into a regular head. The leaves of this sort are imbricated, like the *Arbor Vita*, though small, and are of a browner kind of green than the Common Cypress. The fruit is very small, and of a blue colour, and will be produced in great plenty all over the plant. They are of the size of the juniper-berry, and much resemble it ; though they are cones, and like the other species of this genus, but much smaller. When these plants are raised from seeds, they will aspire to a greater height, especially if planted in a moist soil ; but those raised by cuttings generally have the appearance of shrubs. They are all, however, very beautiful, and greatly embellish those parts of the evergreen plantations where they are stationed.

3. AFRICAN CYPRESS. The branches of this species are numerous, slender, and spread themselves all around. The leaves are narrow, awl-shaped, about an inch long, of a light-green colour, and grow opposite to each other on the branches. The flowers come out from the sides of the branches, like the
Common

Common Cypress, and they are succeeded by black fruit; but the seeds never ripen in England.

The method of PROPAGATING the Common Cypress is from seeds sown in a warm border, or well-sheltered beds, of light sandy loam, near half an inch deep, in the month of March; and by the beginning of May the plants will be up. After they have come up, if the summer should not prove very dry, they will require little watering; and even in the greatest drought twice a week will be sufficient for them, provided it be done in the evenings. This is the only care they will require the first summer, except being kept clean from weeds. In the winter, if the place where they are sown be tolerably well sheltered, they will stand it very well, though it should prove severe; but where the situation is not well sheltered by plantations to break the violence of the frosty black winds, they must be screened, otherwise many will be lost. It is the black frosts, attended by high winds, which will destroy these plants; so that where there is not shelter enough to break their edge, the beds should be hooped over, and covered with mats during that severe weather. The ensuing summer the plants may remain undisturbed, when they will require no watering, and no farther care except weeding. The spring following, being then two years old, they should be set out in the nursery, exactly at two feet square. In taking them out of the seed-bed, some earth should be taken with the roots. The latter end of March is the most proper time for this work; and if the weather should prove dry and cold, as it often happens, the March winds blowing, the work must be deferred till rainy or cloudy weather; for without these precautions, you will find this a difficult plant to remove. After they are planted out in the nursery, they may be now and then watered in dry weather, kept clean from weeds, and thus may stand till they are of a sufficient size to be planted out. They will grow in almost any soil; but above all affect sandy gravelly ground.

With regard to the African and the American Cypress, the seeds should be sown in pots or boxes. We receive them from abroad: They are very small, and seldom come up before the second spring; so that there will be less danger of their being lost if they are sown in pots or boxes, which may be set in the shade in summer, and removed into well-sheltered places during the winter.

winter. In the spring the plants will come up ; and after that the Blue-berried Cypress may have the same treatment as the young seedlings of the Common sort. With respect to the Cape Cypress, the plants must be set in pots, to be housed in winter, until they are grown to be a yard high. When they are turned out into the open air, they should have a dry, warm soil, and a well-sheltered place, and even these will not ensure their safety ; so that whoever is desirous of having these trees in his plantations, should have some wooden sconces made, to cover them in frosty weather ; and if this is observed until they are grown of a tolerable size, there is no doubt but they will live, in a warm well-sheltered place, through our common winters.

4. The DECIDUOUS CYPRESS will grow to be near sixty feet high, if stationed in a place suitable to its nature. It is very hardy in respect to cold ; and a share of the moistest part of the plantation must be allotted it. In Virginia and several parts of America, where this tree is a native, it is a real aquatic ; being found growing to a very large size in places wholly covered with water ; and with us, if planted in watery places, by the edges of rivers, ponds, springs, &c. it will be more luxuriant, and will proportionally rise to a greater height and bulk than if planted in a dry soil. This tree in the summer has a little the resemblance of an evergreen, and the leaves have a pleasing effect, appearing in some respect like some sorts of the Acacias ; and these are the chief inducements for its admission into the pleasure-ground.

This species may be PROPAGATED from *seeds* in the same manner as the Common Cypress ; also from *cuttings* planted in October in a moist sandy soil. Many of them will grow ; though a general crop can seldom be obtained ; and they should be kept clean of weeds the summer following, as well as the summer after that. In the autumn, or any part of the winter, they should be planted out in the nursery ; and, if they are to stand there a considerable time, they should be allowed a good distance ; for they will grow, with proper care, when removed at a large size. If any part of the nursery-ground is moister than the other, they must have a share of it. The ground should be constantly dug between the rows every winter, the weeds hoed down in summer, and, when planted out, these

trees should have moist places, in consequence of what has been before observed.

C Y N A N C H U M.

LINNEAN Class and Order, *Pentandria Digynia* : Each flower contains five males and two females ; There are fourteen SPECIES ; most of them climbing : Three are sufficiently hardy for this climate.

1. *Cynanchum Acutum* : The ACUTE-LEAVED CYNANCHUM, or the ACUTE-LEAVED MONTPELIER SCAMMONY ; an herbaceous climber ; native of the South of Europe.

2. *Cynanchum Monspeliacum* : The ROUND-LEAVED CYNANCHUM, or ROUND-LEAVED MONTPELIER SCAMMONY ; an herbaceous climber ; native of Spain and the South of France.

3. *Cynanchum Suberosum* : The CAROLINA CYNANCHUM, or the CAROLINA PERIPLOCA ; a ligneous climber ; native of Carolina and other parts of America.

1. The ACUTE-LEAVED CYNANCHUM. The root is strong, creeping, and spreads itself to a considerable distance. The stalks are herbaceous, twist about every thing that is near them, will grow to be six feet long, but always die to the ground in the autumn, and fresh ones are put forth from the roots in the spring. The leaves are oblong, heart-shaped, acute-pointed, smooth, and grow opposite by pairs on long footstalks. The flowers come out from the wings of the leaves in small bunches ; they are of a dirty white colour, appear in June and July, but are not succeeded by good feeds in our gardens. This plant, on being wounded, emits a milky juice.

2. ROUND-LEAVED CYNANCHUM. The root of this species is large, thin, juicy, and spreads itself to a considerable distance. The stalks are herbaceous, and twine to six or seven feet high about whatever is near them. The leaves are broad, reniform, roundish, and grow opposite, on long footstalks. The flowers come out from the wings of the leaves, in small bunches ; they are of a bad white colour, appear in June and July, and are rarely.

rarely succeeded by good seeds in our gardens. The stalks die to the ground in the autumn, and fresh ones arise again in the spring. On wounding any part of this plant, a milky juice immediately flows.

3. CAROLINA CYNANCHUM. The stalks of this species are slender, ligneous, shrubby, and will twist about any thing to the height of about seven feet. They are hairy, and their lower part is covered with a thick, fungous, cloven, cork-like bark. The leaves are oval, heart-shaped, pointed, and grow opposite at the joints on long hairy footstalks. The flowers come out from the wings of the leaves in small bunches. They are greenish on their first appearance, but die away to a bad purple. They exhibit themselves in July and August; but are not succeeded by good seeds in our gardens.

This sort is PROPAGATED by laying down the young shoots as they advance in the summer, and covering them over with some fine mould. These will soon put out roots, by the autumn will be good plants, and may then be removed to the places where they are designed to remain. This species is rather tender; and the soil in which it is planted should be naturally dry, warm, light, and sandy, and the situation well defended. Being thus stationed, it will live abroad, and continue for many years; but if the soil is moist, rich, and ill-defended, the chance will be very great but it will be destroyed the first winter.

The two first sorts are exceedingly hardy, will grow in any soil or situation, and will over-run any small plants that are near them. Their situation, therefore, should be among such trees as have strength enough to admit their embraces; and their propagation is by cutting the roots in the autumn. Every cut will grow; and, when planted, will call for no trouble except keeping them clear from weeds, when they first shoot up in the spring.

C Y T I S U S.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female; the males rising in

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two

two divisions : There are fourteen SPECIES ; five of which afford considerable ornament to the English garden.

1. *Cytisus Sessilifolius* : The SESSILE-LEAVED CYTISUS (or TREFOIL TREE, or BASE TREE TREFOIL), or CYTISUS SECUNDUS CLUSII, or the SMOOTH ROUND-LEAVED CYTISUS ; a *deciduous shrub* ; native of France, Italy, and Spain.

2. *Cytisus Nigricans* : The BLACK CYTISUS ; or the BLACKISH SMOOTH CYTISUS ; a *deciduous shrub* ; native of Austria, Bohemia, Italy and Spain.

3. *Cytisus Austriacus* : The TARTARIAN CYTISUS ; or the AUSTRIAN CYTISUS ; a *low deciduous shrub* ; native of Austria, Siberia and Italy.

4. *Cytisus Laburnum* : The LABURNUM ; a *deciduous tree* ; native of Switzerland, Savoy, and most parts of Europe.

5. *Cytisus Hirsutus* : The EVERGREEN CYTISUS ; or the EVERGREEN CYTISUS OF NAPLES ; or the ITALIAN CYTISUS WITH HAIRY LEAVES ; an *evergreen shrub* ; native of Italy, Spain, Austria and Siberia.

1. The SESSILE-LEAVED CYTISUS will grow to the height of about five or six feet. The branches are numerous, erect, very brittle, and covered over with a smooth brown bark. The leaves are small, and of a fine green : They are nearly of an oval figure, and grow by threes on the twigs ; on some branches they sit quite close, on others they grow on very short footstalks. The flowers grow at the ends of the branches, in short spikes : They are of a fine yellow, come out the beginning of June, and when in full blow the shrub will appear almost covered with them. The seeds usually ripen in August.

2. BLACK CYTISUS will arrive to about the height of the former, and naturally divides into many branches. The bark is brown, and the young shoots are of a greenish-red. The leaves resemble Trefoil : They are smooth, and grow three together on brownish footstalks ; the folioles are of an oblong oval figure, and their upper surface is of a dark-green, but they are paler underneath. The flowers are produced in long, erect, close spikes, at the ends of the branches : They are of a beautiful yellow colour, come out in July, and when in full blow make a fine appearance. The seeds ripen in the autumn.

3. **TARTARIAN CYTISUS.** The stalks are shrubby, branching, green, and grow to three or four feet high. The leaves are oval, oblong, smooth, and of a whitish-green colour. The flowers come out in close heads from the ends of the branches, in May : They are of a light-yellow colour, and have a cluster of leaves under them ; they are sometimes succeeded by short woolly pods, containing the seeds.

There is a *variety* of this species, with naked stalks, smaller leaves and flowers, rather earlier in the spring, usually called the *Siberian Cytisus*.

4. The **LABURNUM** is a large-growing tree : It will aspire to the height of near forty feet, and is one of the most noble trees our gardens afford. It will form itself into a fine head ; its branches are smooth, of a pale-green colour, and possessed of a few greyish spots. The leaves stand by threes on long slender footstalks ; Each of these is oblong and entire ; their upper surface is smooth, and of a shining green, but their under surface is more inclined to be downy. The time of this tree's flowering is May ; and the effect can hardly be conceived which it will have, when it appears covered with its long pendulent bunches of flowers, of a delightful yellow. Each flower that helps to compose one set is tolerably large of itself, and the common stalk to which they adhere by their own separate footstalks is often a foot or more in length ; so that the appearance must be most noble, when it exhibits these long series of flowers hanging down from almost every part of the whole head : **HANBURY** continues, " But this is not all ; the timber when felled is exceeding valuable. It will arrive in bulk in proportion to its height ; and the timber is both heavy and hard, and of a fine colour, inclined to yellow. The very branches of this tree are so ponderous as to sink in water. It polishes extremely well, and is so much like to green ebony, that it is called by the French, *Ebony of the Alps*, where the tree grows naturally. And as the timber is so valuable for many sorts of rich furniture, this should arouse the timber-planter's attention ; for it will grow to be a timber-tree of more than a yard in girth, in almost any poor and sorry soil, where other trees will hardly grow, let the situation be what it will : And how enchantingly ornamental must large quarters or clumps of these trees appear,

either by the borders of other woods, or in parks, and at the same time the expectation of the timber-crop retained !”

There are some other sorts of *LABURNUMS*, of equal or more beauty than the preceding : One is called the *Scotch Laburnum*, another the *Italian*. The leaves of these are larger, and the bunches of flowers longer ; and the individual flowers of which the bunches are composed proportionally larger. There is also another sort, with smaller leaves, and bunches longer than the common, which difference it always preserves from seeds ; and these being planted among the common sort, will afford the greater variety.

One method of PROPAGATION is common to all these sorts : It is to be performed both by seeds and cuttings. 1. When by seeds, common garden-mould, when dug, and cleared of the roots of all weeds, will do for their reception. They should be sown in the spring, in beds neated up, about half an inch deep, and in about six weeks the young plants will appear. Nothing more will be necessary than keeping them clean from weeds during the summer, unless the weather proves very dry ; if it does, a little watering sometimes will be proper. The spring following, the *Laburnums* should be planted out in the nursery ; but the other sorts should stand in the seed-bed two years, to gain strength, before they are taken up. These should be planted a foot asunder, and two feet distant in the rows ; but the *Laburnums* ought to have a rather greater distance, especially if they are designed to be trained up for standards. 2. Another method of encreasing these sorts is by cuttings. October is the best month for the work ; and the cuttings may be planted either a foot asunder, and two feet distant in the rows, so that they need not be removed till they are taken up for good ; or they may be set very thick, and those which live taken up the winter following, and planted out in the nursery-way, at distances wide in proportion to the time they are to stand.

5. The EVERGREEN CYTISUS. This shrub is naturally of an upright growth, and its common height is about six or seven feet. It may be trained up to a single stem, for two, three, or four feet high, and will naturally send out many branches, which will form themselves into a fine head. The bark on the
stem

stem is of a grey colour; the branches also are grey with a green cast at a distance; and many of them will have the appearance of being channelled, the bottom of the grooves being of a dusky green, but their upper edges white. The younger shoots are green and streaked, and their surface is hairy. The leaves also have this property, and stand three upon a short foot-stalk. They are nearly of an oval figure, and have a strong mid-rib running the whole length. They are of a fine green colour, and clothe the shrub with great beauty. The flowers are of a clear yellow colour, and are shaped like those of the other sorts: They appear in June, and are produced from the sides of the branches, all over the shrub, in short bunches; so that its golden head at that time is both beautiful and striking. Neither is June the only time of its flowering; for it will often flower again in October; and, if the winter continues open and mild, it will sometimes shew its blossoms in November and December. The flowers that appeared in June, which is its regular time of blow, will be succeeded by small hairy pods, in which the seeds are contained, and which ripen with us very well in the autumn.

This sort should be PROPAGATED by seeds, which should be sown in the spring, and managed as directed for the deciduous sorts; only it may not be amiss to observe, that it will be necessary to plant the seedlings in the nursery when they have stood one year in the seed-bed. They should be set about a foot asunder, in rows at two feet distance; and here they may stand for about two years, when they should be planted out.

D A P H N E.

LINNEAN Class and Order, *Osandria Monogynia*: Each flower contains eight males and one female: There are fifteen SPECIES; eight of which are proper for our collection.

1. *Daphne Mezereum*: The MEZEREON, or SPURGE-OLIVE; a low deciduous shrub; native of Germany; and has been discovered in this country in some woods near Andover, in Hampshire.

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2. *Daphne*

2. *Daphne Gnidium*: The FLAX-LEAVED DAPHNE, or FLAX-LEAVED THYMELÆA; a low deciduous shrub; native of Italy, Spain, and about Montpellier.

3. *Daphne Cneorum*: The SPEAR-LEAVED DAPHNE, or the CNEORUM; or the CLUSTER-FLOWERING SPEAR-LEAVED DAPHNE; a very low deciduous shrub; native of Switzerland, Hungary, the Alps and the Pyrenean Mountains.

4. *Daphne Tartonraira*: The OVAL-LEAVED DAPHNE, or the TARTON-RAIRE; or CLUSTER-FLOWERING OVAL-LEAVED DAPHNE; a very low deciduous shrub; native of France and Italy.

5. *Daphne Alpina*: The ALPINE DAPHNE; or the ALPINE CHAMELÆA; a low deciduous shrub; native of the Alps, Geneva, Italy and Austria.

6. *Daphne Thymelæa*: The MILKWORT-LEAVED DAPHNE, or the THYMELÆA; a low deciduous shrub; native of Spain and the South of France.

7. *Daphne Villosa*: The HAIRY-LEAVED DAPHNE, or the SMALL HAIRY PORTUGAL DAPHNE; a very low deciduous shrub; native of Spain and Portugal.

8. *Daphne Laureola*: The SPURGE LAUREL, or the EVER-GREEN DAPHNE; a low evergreen shrub; common in some parts of this kingdom, also in Switzerland and France.

1. The MEZEREON. Of this elegant plant there are four Varieties: 1. The White. 2. The Pale-red. 3. The Crimson. and, 4. The Purple-flowering.—HANBURY is very lavish of his praise of these shrubs; he says, "they have each every perfection to recommend them as flowering-shrubs. In the first place, they are of low growth, seldom arising to more than three or four feet in height, and therefore are proper even for the smallest gardens. In the next place, they will be in bloom when few trees, especially of the shrubby tribe, present their honours. It will be in February, nay, sometimes in January; then will the twigs be garnished with flowers, all around, from one end to the other. Each twig has the appearance of a spike of flowers of the most consummate lustre; and as the leaves are not yet out, whether you behold this tree near or at a distance, it has a most enchanting appearance. But this is not all; the sense of smelling is peculiarly regaled by the flowers; their spicy sweetness is diffused around, and the air is perfumed with their odours to a considerable distance. Many flowers, deemed sweet, are not liked by all; but the agreeable inoffensive sweetness

wort. The flowers are produced in clusters from the sides of the stalks : They are of a greenish colour, have no footstalks, appear in March, and are succeeded by small yellowish berries, which will be ripe in August. This sort requires a dry soil and a warm situation.

7. HAIRY-LEAVED DAPHNE. The stalks are ligneous, about two feet high, and send forth branches alternately from the sides. The leaves are spear-shaped, plane, hairy on both sides, and grow on very short footstalks. The flowers have very narrow tubes, are small, and make no great show : They come out in June, and are not succeeded by ripe seeds in England. This shrub, in some situations, retains its leaves all winter in such beauty as to cause it to be ranked among the low-growing evergreens ; but as in others it is sometimes shattered with the first black winds, it is left to the Gardener whether to place this shrub among the Deciduous Trees or Evergreens.

All these sorts are with some difficulty PROPAGATED and retained. They will by no means bear removing, even when seedlings ; and if ever this is attempted, not one in an hundred must be expected to grow. They are raised by seeds, which we receive from the places where they grow naturally ; and he who is desirous of having these plants, must manage them in the following manner : Let a compost be prepared of these equal divisions ; one-fourth part of lime-rubbish ; one-fourth part of drift or sea sand ; another of splinters of rocks, some broad and others smaller ; and the other part of maiden earth, from a rich pasture. Let these be mixed all together, and filled into largish pots. In each of these pots put a seed or two, about half an inch deep, in the finest of the mould. We receive the seeds in the spring ; so that there is little hopes of their coming up until the spring following : Let, therefore, the pots be set in the shade all the summer, and in the autumn removed into a warm situation, where they may enjoy every influence of the sun's rays all winter. In March let them be plunged into a moderate hot-bed, and the plants will soon after appear. This bed will cause them to be strong plants by the autumn ; and when all danger of frost is over, they may be uncovered wholly, and permitted to enjoy the open air. In the autumn, they should be removed into the greenhouse, or set under a hot-bed frame all winter ; and in spring they should be placed
where

in the feed-bed until the second autumn : when they should be taken up with care, and planted in beds at a foot asunder each way. This will be distance enough for these low-growing shrubs. October is the best month for planting them out finally ; for although they will grow if removed any time between then and spring, yet that will certainly be a more proper season than when they are in full blow. Such is the culture of this shrub. The other species of this genus require a different management.

2. FLAX-LEAVED *DAPHNE* seldom grows higher than three feet. The branches are very slender, and ornamented with narrow, spear-shaped, pointed leaves, much like those of the Common Flax. The flowers are produced in panicles at the ends of the branches : They are small, come out in June, but are rarely succeeded by seeds in England.

3. SPEAR-LEAVED *DAPHNE*, or *CNEORUM*. This rises with a shrubby, branching stalk, to about a foot or a foot and a half high. The leaves are narrow, spear-shaped, and grow irregularly on the branches. The flowers are produced in clusters at the ends of the little twigs : They make their appearance in March, are of a purple colour, and possessed of a fragrance little inferior to that of the *Mezerion* ; but they are seldom succeeded by seeds in England.

4. OVAL-LEAVED *DAPHNE*, or *TARTON-RAIRE*. This rises with a woody stalk to the height of about two feet. The branches are numerous, irregular, tough, and covered with a light-brown-coloured bark. The leaves are oval, very small, soft to the touch, and shining. The flowers are produced in clusters from the sides of the stalks : They are white, come out in June, and are succeeded by roundish berries, which seldom ripen in England. This sort should have a dry soil and a warm situation.

5. The ALPINE *DAPHNE*, or *CHAMELÆA*, will grow to the height of about a yard. The leaves are spear-shaped, obtuse, and hoary underneath. The flowers come out in clusters from the sides of the branches, and are very fragrant : They appear in March, and are succeeded by red berries, that ripen in September.

6. MILKWORT-LEAVED *DAPHNE*, or *THYMELÆA*, will grow to the height of a yard. The stalks of this species are upright, branched, and covered with a light-brown bark. The leaves are spear-shaped, smooth, and in some respect resemble those of Milk-
wort.

wort. The flowers are produced in clusters from the sides of the stalks : They are of a greenish colour, have no footstalks, appear in March, and are succeeded by small yellowish berries, which will be ripe in August. This sort requires a dry soil and a warm situation.

7. HAIRY-LEAVED DAPHNE. The stalks are ligneous, about two feet high, and send forth branches alternately from the sides. The leaves are spear-shaped, plane, hairy on both sides, and grow on very short footstalks. The flowers have very narrow tubes, are small, and make no great show : They come out in June, and are not succeeded by ripe seeds in England. This shrub, in some situations, retains its leaves all winter in such beauty as to cause it to be ranked among the low-growing evergreens ; but as in others it is sometimes shattered with the first black winds, it is left to the Gardener whether to place this shrub among the Deciduous Trees or Evergreens.

All these sorts are with some difficulty PROPAGATED and retained. They will by no means bear removing, even when seedlings ; and if ever this is attempted, not one in an hundred must be expected to grow. They are raised by seeds, which we receive from the places where they grow naturally ; and he who is desirous of having these plants, must manage them in the following manner : Let a compost be prepared of these equal divisions ; one-fourth part of lime-rubbish ; one-fourth part of drift or sea sand ; another of splinters of rocks, some broad and others smaller ; and the other part of maiden earth, from a rich pasture. Let these be mixed all together, and filled into largish pots. In each of these pots put a seed or two, about half an inch deep, in the finest of the mould. We receive the seeds in the spring ; so that there is little hopes of their coming up until the spring following : Let, therefore, the pots be set in the shade all the summer, and in the autumn removed into a warm situation, where they may enjoy every influence of the sun's rays all winter. In March let them be plunged into a moderate hot-bed, and the plants will soon after appear. This bed will cause them to be strong plants by the autumn ; and when all danger of frost is over, they may be uncovered wholly, and permitted to enjoy the open air. In the autumn, they should be removed into the greenhouse, or set under a hot-bed frame all winter ; and in spring they should be placed
where

where they are to continue, moulding them up the height of the pot; the pots being sufficiently broken to make way for their roots, as they shoot, and then left to Nature.—The situation of the four tenderer sorts must be well sheltered, and if it be naturally rocky, sandy, and dry, it will be the better; for in the places where they grow naturally, they strike into the crevices of rocks, and flourish where there is hardly any appearance of soil.

This is one method of obtaining these shrubs. Another way is, by sowing the seeds in the places where they are to remain. The situation and nature of the soil should be as near that above described as possible; and the mould should be made fine in some places, and a seed or two sown in each. After this, pegs should be stuck down on each side of them, to direct to the places where they are sown. The exactest care must be observed, all summer, to pull up the weeds as often as they appear; for if they are permitted to get strong, and have great roots, they will pull up the seeds with them. In the spring following, if the seeds are good, the plants will appear. During the summer, they should be watered in dry weather; and, for the first winter or two, should have some furze-bushes pricked all round them, at a proper distance, which will break the keen edge of the frosty winds, and preserve the young plants until they are strong enough to defend themselves.

The CNEORUM and the ALPINE CHAMELÆA are very hardy, and will grow in the coldest situation; but the other sorts should have a warm soil and a well-sheltered site, or they will be subject to be destroyed in bad weather.

8. The SPURGE-LAUREL, or EVERGREEN DAPHNE, is a low shrub, seldom growing more than a yard or four feet high; it sends out many branches from the bottom, and these are covered with a smooth light-brown bark, that is very thick. The bark on the younger branches is smooth and green; and these are very closely garnished with leaves of a delightful strong lucid green colour. These leaves sit close to the branches, and are produced in such plenty, that they have the appearance, at a small distance, of clusters at the ends of the branches. They are spear-shaped, shining, smooth, and thick; their edges are entire. HANBURY extols this plant with a degree of enthusiasm; continuing, “and this is another excellent property of this tree, that it is thus possessed of such delightful leaves for its ornament. These leaves,

leaves, when growing under the drip of trees, spread open, and exhibit their green pure and untarnished, in its natural colour : when planted singly in exposed places, they naturally turn back with a kind of twist, and the natural green of the leaf is often alloyed with a brownish tinge. This shrub is also valuable on account of its flowers ; not because they make any great show, but from their fragrance, and the time they appear ; for it will be in blow the beginning of January, and will continue so until the middle or latter end of April before the flowers fall off ; during which time they never fail to diffuse abroad their agreeable odours, which are refreshing and inoffensive. In the evenings especially, they are more than commonly liberal ; inasmuch that a few plants will often perfume the whole end of a garden ; and when this happens early, before many flowers appear, the unskilful in flowers, perceiving an uncommon fragrantcy, are at once struck with surprize, and immediately begin enquiring from whence it can proceed. Neither are its odours confined to a garden only ; but, when planted near windows, they will enter parlours, and ascend even into bed-chambers, to the great comfort of the possessor, and surprize of every fresh visitor." These flowers make but little show ; for they are small, and of a greenish-yellow. They are produced amongst the leaves from the sides of the stalks, in small clusters, and will often be so hid by them, as to be unnoticed by any but the curious. They are succeeded by oval berries, which are first green, and afterwards black when ripe. These berries will be in such plenty as to be very ornamental ; but will soon be eaten up by the birds ; which is another good property of this tree, as it invites the different sorts of whistling birds to flock where it is planted in great plenty.

This shrub is PROPAGATED by seeds, in the same manner as the Common *Mexereon*. The seeds must be preserved from the birds by nets, until they are ripe. Soon after, they must be sown as is directed for the *Mexereon*. They will often be two years before they come up ; during which time, and afterwards, they may have the same management as has been laid down for the Common *Mexereon*, until they be finally set out.

This shrub will grow in almost any soil or situation, but flourishes most under the shade and drip of taller plants, giving a peculiar cheerfulness to the bottoms of groves and clumps in winter.

D I O S P Y R O S.

LINNEAN Class and Order, *Polygamia Dioecia*: Some of the plants of this genus bear hermaphrodite and female flowers upon the same individual, whilst others bear male flowers only; each of which contains eight stamina. There are five SPECIES; three of which are of late discovery: The other two are,

1. *Diospyros Lotus*: The INDIAN DATE-PLUM; a low deciduous tree; native of Africa and the South of Europe.

2. *Diospyros Virginiana*: The PISHAMIN-PLUM; a tall deciduous shrub; native of Virginia, Carolina, and many parts of North-America.

1. The INDIAN DATE-PLUM will arrive at the height of more than twenty feet, and is an excellent tree for shade. It aspires with an upright stem, and the young branches are covered with a smooth whitish bark. The youngest twigs stand alternately on those of the preceding year, and the buds for the next year's shoot begin to swell soon after the fall of the leaf. The leaves are of two colours; their upper surface is of a delightful green, and their lower of a whitish cast. They are of an oblong figure, end in a point, and are in length about four inches and a half, and near two inches broad. They are placed alternately on the branches, and several strong veins run alternately from the mid-rib to the borders, which are entire. These leaves will be of a deep green, even when they fall off in the autumn. The flowers have little beauty to recommend them: they are pitcher-shaped, and grow singly on short foot-stalks, on the sides of the branches: they are of a reddish colour, and are succeeded by largish black berries, which are eatable, like the medlar, when in a state of decay.

2. The PISHAMIN-PLUM will not aspire to the height of the former species, though it will sometimes grow to near twenty feet. The branches of this tree are whitish, smooth, and produced in an irregular manner. The leaves are very large and beautiful; about five or six inches long, and three broad. Their upper surface is smooth, and both sides are of a beautiful green. They are of an oblong figure, end in a point, grow irregularly on the branches, and have several veins running from the mid-ribs to

the borders, which are entire. They fall off in the autumn, at the coming-on of the first frosts, when their colour will be that of a purplish red. The flowers, like those of the other sort, make no great appearance ; but are succeeded by a fruit, which is eatable, when, like medlars, it is in a state of decay.

Both these sorts are PROPAGATED from the seeds, which we receive from abroad, in the spring. The compost proper for their reception is maiden earth, from a rich pasture, dug up sward and all a year before, and three or four-times turned in order to rot the sward. This being made fine, a fourth part of drift or sea sand should be added ; and being all well mixed, the seeds should be sown in pots or boxes, three quarters of an inch deep. The pots should afterwards be placed in a shady place during the summer ; for the seeds rarely come up until the second spring ; and in the autumn they should be removed into a well-sheltered place, where they may enjoy the benefit of the sun all winter. In the spring the plants will come up ; and if they are assisted by plunging the pots into a moderate hotbed, it will make them shoot stronger ; though this is not absolutely necessary. All the summer they should stand in a shady place, where they may have free air ; and, if the weather proves dry, they should be watered every other evening. At the approach of winter, they should be removed into the greenhouse, or placed under an hot-bed-frame, or some shelter ; and, when all danger of frost is over, they must be put in the same shady situation as in the former summer. In the winter also they should be hooped as before ; and in spring may be planted in the nursery-ground. The plants, when they get tolerably strong, are very hardy ; though even then the ends of the branches are subject to be killed ; so that when they are seedlings, or very young, they will be in danger of being destroyed by the frosts, which makes the above-directed care and protection necessary till they have gained strength.

E L Æ A G N U S.

LINNEAN Class and Order *Tetrandria Monogynia*: Each flower contains four males and one female: There are four SPECIES; two of which have been introduced into this country; one of them requiring a stove heat; the other sufficiently hardy to bear the open air; namely,

Elæagnus Angustifolia: The NARROW-LEAVED ELÆAGNUS, or the OLEASTER, or the WILD OLIVE; a tall deciduous shrub; native of Bohemia, Spain, Syria, and Cappadocia.

The NARROW-LEAVED ELÆAGNUS, or the OLEASTER, will grow to be near twenty feet high. Whilst the leaves of most trees are possessed of a verdure, and occasion variety by the difference of greens they exhibit, the leaves of the plant under consideration are white, especially the under-side, and stand upon white twigs. The branches are of a brown colour; but the preceding year's shoots are white and downy, the silvery leaves being placed irregularly upon them: These are of a spear-shaped figure, about two, and sometimes three inches long, and three quarters of an inch broad, and are as soft as satin to the touch. Neither is summer the only time the leaves afford us pleasure: They continue on the tree great part of the winter; so that the effect they cause, when other trees are despoiled of their honours, may be easily conceived. The flowers appear in July, but make no figure: They are small, and come out at the footstalks of the leaves; their colour is white, and they are possessed of a strong scent. The fruit that succeeds them much resembles a small olive.

This shrub has a *variety*, with yellow flowers.

The culture of both the sorts is very easy. They are PROPAGATED by cuttings, which must be of the last summer's shoot. But in order to have them proper for the purpose, a sufficient number of trees must be fixed on, from which the family is to be increased. They must be headed near the ground in the winter; which will cause them to make strong shoots the succeeding summer, and these shoots afford the cuttings. They should be taken off in the autumn, and cut into lengths of about a foot each, three parts of which should be set in the ground. They may

may be planted very close, and in the autumn following removed into the nursery, where they should be set a foot asunder, and two feet distant in the rows; or, if there be ground enough, they may be planted thinner, and so will want no removing until they be finally set out. The best soil for these cuttings is a rich garden mould, inclined to be moist, and lying in a shady place; in such a soil and situation almost every cutting will grow. The tree itself is exceedingly hardy, and will afterwards shoot vigorously, in almost any soil or station.

E P H E D R A.

LINNEAN Class and Order, *Dioecia Monadelphia*: Male flower, containing seven stamens connected at the base, and female flowers containing two pistils, situated upon distinct plants. There are two SPECIES; one of them of a hardy nature;—

EPHEDRA DISTACHYA: The EPHEDRA, or SHRUBBY HORSE TAIL; a *sub-evergreen shrub*; native of rocky mountains, near the sea-coast of Italy, France, and Spain.

The EPHEDRA will grow to three, four, five, or six feet high, according to the nature of the soil in which it is placed; for if it be a fat moist soil, it will arrive to double the height it will attain in that of a contrary nature, and will be more tree-like; it will also have much larger leaves, and be more beautiful. The bark on the old stem is rough, and of a dark, dirty colour. These stems or branches are few; but they have joints at short intervals. Many of them are protuberant, and send forth younger shoots and leaves in prodigious plenty, so as to cause the shrub to have a close bushy look. The older branches will have bark that is smooth, and of a brown, reddish, or yellowish colour; whilst that on the younger shoots will be of a fine green. The larger branches are jointed and hollow, though they have sometimes in them a kind of reddish pith; those send forth smaller, which are called the leaves. These leaves are jointed, grow opposite by pairs, are alternately produced at every joint in opposite directions, and will thus branch out in a singular and horse-tail manner, in a suitable soil, to a great length. The leaves and shoots of this shrub being bruised in the winter, emit a very foetid disagreeable

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scent;

They make no great show ; but they will be succeeded by rough, warted, red, five-cornered capsules, containing the seeds.

This species is to be PROPAGATED in the same manner as the other sorts. 1. The best way is from seeds, which we receive from Virginia. These will be two, and sometimes three years before they appear ; so that a person should not be too hasty in disturbing the beds ; and after this precaution, what has been already said relating to the management of raising the common sorts of Spindle Trees from seeds, must constantly be observed in this species. 2. By layers also, and cuttings, it may be increased ; but when the latter way is to be practised, it will be proper to plant each cutting separately in a small pot, and plunge them into a bark-bed, otherwise it is very seldom that they will grow. After they have taken root, the pots may be set in the natural mould up to the rims for about two years ; then the plants should be turned out into the places where they are to remain, and they will be sure of growing.

F A G U S.

LINNEAN Class and Order, *Monoecia Polyandria* : Male flowers and female flowers upon the same plant ; the males containing about twelve stamina, and the females three pistils each : There are three SPECIES :

1. *Fagus Sylvatica* : The BEECH ; a well-known tall deciduous tree ; common in England and most parts of Europe, also in Canada.

2. *Fagus Castanea* : The CHESNUT, or the SPANISH or SWEET CHESNUT ; a tall deciduous tree ; natural to the mountainous parts of the South of Europe.

3. *Fagus Pumila* : The DWARF CHESNUT, or the CHINQUEPIN ; a deciduous shrub ; native of North-America.

1. The BEECH. In stateliness, and grandeur of outline, the Beech vies with the Oak. Its foliage is peculiarly soft and pleasing to the eye ; its branches are numerous and spreading ; and its stem waxed to a great size. The bark of the Beech is remarkably

E U O N Y M U S.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female: There are four SPECIES; three of which are cultivated in this country; one of them, however, requires a stove-heat: The other two are,

1. *Euonymus Europæus*: The COMMON OF EUROPEAN EUONYMUS, or the SPINDLE TREE; a *deciduous shrub or tree*; native of some parts of England, and of Europe in general.

2. *Euonymus Americanus*:—The EVERGREEN OF AMERICAN EUONYMUS; or the EVERGREEN SPINDLE;—an *evergreen shrub*; native of Virginia, Carolina, and other parts of North-America.

1. The COMMON EUONYMUS. There are of this species five varieties:

The Deep Red-berried Narrow-leaved Spindle Tree.

— Pale Red-berried Spindle Tree.

— White-berried Narrow-leaved Spindle Tree.

— Broad-leaved Spindle Tree.

— Variegated Spindle Tree*.

The *Narrow-leaved Spindle Tree* will grow to be sixteen or eighteen feet high, will aspire with an upright stem to a considerable height, naturally forming itself into a regular head. The bark of the stem is of a dark-brown; but that of the first and second years shoots is smooth, and of a fine green, the White-berried fort especially, which differs from the Red-berried in this respect, as the shoots of that are browner. The leaves are spear-shaped, of a fine deep green colour, about three inches long, and an inch and a half broad, very slightly serrated, and placed nearly opposite on the branches. The flowers have little beauty to recommend them: They are small, and of a greenish colour, produced in small bunches from the sides of the branches, the latter end of May, the bunches hanging on long footstalks; and are succeeded by fruit, which constitutes the greatest beauty of these plants.

* MILLAR makes the two last distinct Species; but HANBURY says, "I have raised thousands of them for sale (there being hardly any shrub more called for), and ever found the seeds of the Broad-leaved Spindle Tree to come up the Common Narrow-leaved fort."

The seeds are of a delightful scarlet; four are contained in each vessel; and these opening, expose them to view all over the head of the plant, some just peeping out of their cells, others quite out, and sticking to the edge; and these vessels being in bunches on long pendulent footstalks, have a look which is singularly beautiful. The seed-vessels of the first-mentioned sort are of the same deep scarlet with the seeds; those of the second, of a paler red; those of the third are white, which, together with the twigs of the latter being of a lighter green, constitute the only difference between these sorts; for the seeds themselves of all the sorts are of a deep scarlet.

The *Broad-leaved Spindle Tree* is a variety of the Common Spindle Tree, though it will grow to a greater height than either of the other sorts. It will arrive at near five-and-twenty feet high; and the branches are fewer, and the leaves broader. The young shoots are smooth, and of a purplish colour; and the buds at the ends of them, by the end of October, will begin to be swelled, and be near an inch long, preparing for the next year's shoot. The leaves are much larger than those of the other sorts, being, on a thriving plant, near five inches long and two broad. Their figure is like the other, though rather inclined to an oblong oval: Some are most slightly serrated, of a light-green, stand opposite by pairs, and fall off much sooner in the autumn, before which their colour will be red. The flowers make an inconsiderable figure, though they are rather larger than the other sorts: The seeds that succeed them with their vessels also are proportionably larger; and many of the common footstalks to each bunch will be four inches, which causes a more noble look in the autumn; though the others are equally pleasing, as the flowers are produced on the Narrow-leaved sorts in greater plenty: Add to this, the berries of the Broad will fall off long before the others.

The wood of the Common Spindle Tree is spoken of by MILLAR and HANBURY as being very valuable. The musical-instrument-makers, say they, use it for keys of organs, and other purposes. Tooth-picks, skewers, and *spindles* of the best kind are also made from this wood; hence *Spindle Tree*.

There is but one good method of PROPAGATING the Common Spindle Tree, and that is by seeds; though it may easily be done by layers or cuttings; for if the young shoots be laid in the ground in

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in the autumn, they will have struck root by the autumn following; and if cuttings are planted in the autumn in a moist rich earth, that is shaded, many of them will grow; but neither of these methods will produce such fine upright plants, or that will grow to such a height as those raised from seeds, though they will be every whit as prolific of flowers and fruit. Whoever has not the convenience of procuring the seeds, let him improve these hints, if he has got a plant or two, which will be sufficient for his purpose: Whoever can get the seeds, had better never attempt those arts. The seeds should be sown in the autumn, soon after they are ripe. They will thrive in almost any soil or situation, if it be made fine, and clear of the roots of all weeds, &c. though if it be a fine garden-mould, it will be the better. They should be sown three-fourths of an inch deep. It seldom happens that more than a few odd plants come up the first spring; the beds must, therefore, remain untouched until the spring twelvemonth after sowing; only constant weeding must be observed. At that time the plants will come up very thick, and all the summer they must be weeded. In this seed-bed they may stand two years, and be then planted out in the nursery, where they may remain, with no other care than weeding and digging between the rows in winter, until they are finally planted out.

The Broad-leaved sort will take very well by budding it on the Common. The stocks for this purpose should be planted out when they are one year's seedlings, and by the summer twelvemonth after they will be fit for working; so that whoever has young plants of the Common sort, and only one of the other, may encrease his number this way.

2. The EVERGREEN EUONYMUS. Besides the genuine species, there is a *variety* of the *Americanus*, having its leaves beautifully striped with yellow. These sorts grow to the height of about seven feet. The branches are slender, covered with a smooth green bark, and grow opposite by pairs at the joints. The leaves also grow opposite, are spear-shaped, and have a strong mid-rib running their whole length. The upper surface is of a fine strong green colour, but their under is paler. They are smooth, are lightly indented, acutely pointed, and justly entitle this shrub to be called a fine evergreen. The flowers are produced in July, from the sides and ends of the branches, in small bunches.

They make no great show ; but they will be succeeded by rough, warted, red, five-cornered capsules, containing the seeds.

This species is to be PROPAGATED in the same manner as the other sorts. 1. The best way is from seeds, which we receive from Virginia. These will be two, and sometimes three years before they appear ; so that a person should not be too hasty in disturbing the beds ; and after this precaution, what has been already said relating to the management of raising the common sorts of Spindle Trees from seeds, must constantly be observed in this species. 2. By layers also, and cuttings, it may be increased ; but when the latter way is to be practised, it will be proper to plant each cutting separately in a small pot, and plunge them into a bark-bed, otherwise it is very seldom that they will grow. After they have taken root, the pots may be set in the natural mould up to the rims for about two years ; then the plants should be turned out into the places where they are to remain, and they will be sure of growing.

F A G U S.

LINNEAN Class and Order, *Monoecia Polyandria* : Male flowers and female flowers upon the same plant ; the males containing about twelve stamina, and the females three pistils each : There are three SPECIES :

1. *Fagus Sylvatica* : The BEECH ; a well-known tall deciduous tree ; common in England and most parts of Europe, also in Canada.

2. *Fagus Castanea* : The CHESNUT, or the SPANISH or SWEET CHESNUT ; a tall deciduous tree ; natural to the mountainous parts of the South of Europe.

3. *Fagus Pumila* : The DWARF CHESNUT, or the CHINQUEPIN ; a deciduous shrub ; native of North-America.

1. The BEECH. In stateliness, and grandeur of outline, the Beech vies with the Oak. Its foliage is peculiarly soft and pleasing to the eye ; its branches are numerous and spreading ; and its stem waxed to a great size. The bark of the Beech is remarkably

ably smooth, and of a silvery cast ; this, added to the splendor and smoothness of its foliage, gives a striking neatness and delicacy to its general appearance. The Beech, therefore, standing singly, and suffered to form its own natural head, is highly *ornamental* ; and its leaves varying their hue as the autumn approaches, renders it in this point of view still more desirable. In point of actual *Use* the Beech follows next to the Oak and the Ash : it is almost as necessary to the cabinet-makers and turners (especially about the Metropolis), as the Oak is to the ship-builder, or the Ash to the plough and cart-wright. EVELYN nevertheless condemns it in pointed and general terms ; because “ where it lies dry, or wet and dry, it is exceedingly obnoxious to the worm : ” He adds, however, “ but being put ten days in water, it will exceedingly resist the worm. ” The natural soil and situation of the Beech is upon dry, chalky, or limestone heights : It grows to a great size upon the hills of Surry and Kent ; as also upon the declivities of the Cotswold and Stroudwater hills of Gloucestershire, and flourishes exceedingly upon the bleak banks of the Wye, in Hereford and Monmouth shires ; where it is much used in making charcoal. In situations like those, and where it is not already prevalent, the Beech, whether as a timber-tree or as an under-wood, is an object worthy the planter’s attention.

The method of PROPAGATING the Beech is from seeds : EVELYN is brief upon this head. For woods, he says, the Beech must be governed as the Oak :—In nurseries, as the Ash ; sowing the masts “ in autumn, or later, even after January, or rather nearer the spring, to preserve them from vermin, which are very great devourers of them. But they are likewise to be planted of young seedlings to be drawn out of the places where the fruitful trees abound. ” MILLAR says, the season for sowing the masts “ is any time from October to February, only observing to secure the seeds from vermin when early sowed, which, if carefully done, the sooner they are sown the better, after they are fully ripe. ” HANBURY orders a sufficient quantity of masts to be gathered about the middle of September, when they begin to fall : These are to be “ spread upon a mat in an airy place six days to dry ; and after that you may either proceed to sow them immediately, or you may put them up in bags in order to sow them nearer the spring ; which method I would rather advise, as they will keep very well, and there will be less danger of having them destroyed

by mice or other vermin, by which kinds of animals they are greatly relished." They must be sown in beds properly prepared (as directed under the article PROPAGATION FROM SEED, in the Introductory Part of this Work) about an inch deep. In the first spring many of the young plants will appear, whilst others will not come up till the spring following. Having stood two years in the seminary, they should be removed to the nursery, where they may remain till wanted. More will be said of the Beech under WOODLANDS.

2. The CHESNUT. This is a tree of the first magnitude ; growing to a great height, and swelling to an immense size. Mr. Brydone, in a tour through Sicily and Malta, measured the ruins of a celebrated Chestnut, called *Castagno de cento Cavalli*, standing at the foot of Mount Etna, and made it "two hundred and four feet round!" The largest we know of in this country stands at Tortworth, near Berkley, in Gloucestershire. Sir Robert Atkins, in his History of Gloucestershire, says, "By tradition, this tree was growing in King John's reign;" and Mr. Marsham calculates it to be "not less than eleven hundred years old." Sir Robert makes it nineteen yards, and Mr. Marsham forty-six feet six inches in circumference. With great deference however to the authority and veracity of these gentlemen, we have every reason to believe that what is called the Tortworth Chestnut is not one, but two trees : supposing them to be only one, its dimensions are by no means equal to what are given above. We have the highest opinion of Mr. Marsham's ingenuousness and accuracy ; and fortunately, in this case, he has furnished us with a proof of his candour, in saying, "As I took the measure in a heavy rain, and did not measure the string till after I returned to the inn, I cannot so well answer for this as the other measures." We will venture to add, that had the day been fine, and Mr. Marsham had viewed the *field-side* as well as the *garden side* of this venerable ruin ; had he climbed upon the wall, and seen the gable of the old building, adjoining, clasped in between the two stems ; and had further ascended to the top of the old stump, which is not more than twelve feet high, and, looking down its hollowness, seen its cavity tending not to the centre of the *congeries*, but to the centre of the *old Tree*, we are convinced he would not have suffered so inaccurate an account to have been published with his signature,

signature, as that which appears in page 81 of the First Volume of Papers of the Bath Agriculture Society. The leaves of the Chesnut are long, somewhat large, strongly marked by the nerves, and of a dark and somewhat glossy appearance, in summer; but, in autumn, change to a yellow hue. In open uncrowded situations, the Chesnut throws out large spreading arms, forming a magnificent strongly-featured outline; whilst in a close-planted grove the stem will shoot up clean, and straight as an arrow, to a great height.

As an *Ornamental*, the Chesnut, though unequal to the Oak, the Beech, and the Esculus, has a degree of greatness belonging to it which recommends it strongly to the gardener's attention. Its *Uses* have been highly extolled; and it may deserve a considerable share of the praise which has been given it. As a substitute for the Oak, it is preferable to the Elm: For door-jambs, window-frames, and some other purposes of the house carpenter, it is nearly equal to Oak itself; but it is very apt to be *shaky*, and there is a deceitful brittleness in it which renders it unsafe to be used as beams, or in any other situation where an uncertain load is required to be borne. It is universally allowed to be excellent for liquor casks; as not being liable to shrink, nor to change the colour of the liquor it contains: it is also strongly recommended as an underwood for hop-poles, stakes, &c. Its fruit too is valuable, not only for swine and deer, but as a human food: Bread is said to have been made of it. Upon the whole, the Chesnut, whether in the light of ornament or use, is undoubtedly an object of the planter's notice.

The PROPAGATION of the Chesnut is chiefly from seeds: EVELYN says, "Let the nuts be first spread to sweat, then cover them in sand; a month being past, plunge them in water, and reject the swimmers; being dried for thirty days more, sand them again, and to the water-ordeal as before. Being thus treated until the beginning of spring, or in November, set them as you would do Beans; and, as some practise it, drenched for a night or more in new milk; but with half this preparation they need only to be put into the holes with the point upmost, as you plant tulips."—"If you design to set them in winter or autumn, I counsel you to inter them in their husks, which being every way armed, are a good protection against the mouse, and a providential integument."—"Being come up, they thrive best unremoved,

unremoved, making a great stand for at least two years upon every transplanting; yet if needs you must alter their station, let it be done about November;—thus far EVELYN.—MILLAR cautions us against purchasing foreign nuts that have been kiln-dried, which, he says, is generally done to prevent their sprouting in their passage; therefore, he adds, “if they cannot be procured fresh from the tree, it will be much better to use those of the growth of England, which are full as good to sow for timber or beauty as any of the foreign nuts, though their fruit it much smaller.” He also recommends preserving them in sand, and proving them in water. In setting these seeds or nuts, he says, “The best way is to make a drill with a hoe (as is commonly practised for kidney-beans) about four inches deep, in which you should place the nuts, at about four inches distance, with their eye uppermost; then draw the earth over them with a rake, and make a second drill at about a foot distance from the former, proceeding as before, allowing three or four rows in each bed.”—“In April” (he does not mention the time of sowing) “these nuts will appear above-ground; you must therefore observe to keep them clear from weeds, especially while young: in these beds they may remain for two years, when you should remove them into a nursery at a wider distance. The best time for transplanting these trees is either in October, or the latter end of February, but October is the best season: the distance these should have in the nursery is three feet row from row, and one foot in the rows. If these trees have a downright tap-root, it should be cut off, especially if they are intended to be removed again; this will occasion their putting out lateral shoots, and render them less subject to miscarry when they are removed for good. The time generally allowed them in the nursery is three or four years, according to their growth, but the younger they are transplanted the better they will succeed. Young trees of this sort are very apt to have crooked stems; but when they are transplanted out and have room to grow, as they increase in bulk they will grow more upright, and their stems will become straight, as I have frequently observed where there have been great plantations.”—HANBURY follows MILLAR almost literally; except that he mentions February as the time of sowing; and recommends that the young plants, a year after they have been planted in the nursery, be cut down to within

an inch of the ground ; which, he says, " will cause them to shoot vigorously with one strong and straight stem." There is one material objection against sowing Chestnuts in drills, which are well known to serve as guides or conductors to the field-mouse, who will run from one end to the other of a drill without letting a single nut escape her : we rather recommend setting them with a dibble, either promiscuously or a quincunx, at about six inches distance.

EVELYN says, that coppices of Chestnuts may be thickened by layering the tender young shoots ; but adds, that " such as spring from the nuts and marrons are best of all." There is a striped-leaved variegation which is continued by budding ; and the French are said to graft Chestnuts for their fruit ; but MILLAR says, such grafted trees are unfit for timber.

The Chestnut will thrive upon almost any soil which lies out of the water's way ; but disaffects wet moory land. See more of this tree under WOODLANDS.

3. The DWARF CHESNUT grows to about eight or ten feet high. The stem is of a brown colour, and divides into several branches near the top. The leaves are of an oval, spear-shaped figure, acutely serrated, with a hoary cast on their under side. The flowers come out in the spring, in slender knotted catkins : They are of a greenish-yellow colour, and are very seldom succeeded by ripe seeds in England. This tree is hardy, and thrives best in a moist soil and shady situation.

The method of PROPAGATING the Dwarf Chestnut is from seeds, which we receive from America. These should be planted in drills, as soon as they arrive, in a moistish bed of rich garden-mould. If the seeds are good, they will come up pretty soon in the spring. After they appear, they will require no trouble, except keeping them clean from weeds, and watering them in dry weather. They may stand in the seed-bed two years, and be afterwards planted in the nursery-ground, at a foot asunder and two feet distance in the rows ; and here when they are got strong plants, they will be fit for any purpose.

F R A X I N U S.

LINNEAN Class and Order, *Polygamia Dioecia*: Hermaphrodite flowers and female flowers upon distinct plants: the former containing two males and one female each; the latter one pistillum only: There are three SPECIES.

1. *Fraxinus Excelsior*: The COMMON ASH; a well-known tall deciduous tree; common throughout England and most parts of Europe.

2. *Fraxinus Ornus*: The FLOWERING ASH; a low deciduous tree; native of Italy and other southern parts of Europe.

3. *Fraxinus Americana*: The AMERICAN ASH, a low deciduous tree; native of Carolina and Virginia.

1. The COMMON ASH is one of the lofliest of our forest-trees. In a close grove and in a soil it affects it lengthens out into a beautifully clean stem, and rises to an astonishing height: But standing singly, it throws out large arms, forms a full spreading head, and swells out into a stem proportionable: Mr. Marshall mentions a very flourishing one, growing in Beael church-yard, three miles north of Dunbarton, in Scotland, which, in 1768, measured, at five feet high, sixteen feet nine inches in circumference. The leaves of the Ash, too well known to require description, are amongst the last which foliate in the spring, and amongst the first which fall in autumn. This alone depreciates its value very much as an *Ornamental*, especially near gardens and gravel-walks: and planted singly or in hedges, it becomes an utter nuisance in the neighbourhood it stands in: every husbandman knows the injury it does to corn; and there are few dairy-women who are not well acquainted with the evil effects of its leaves, in autumn, upon the produce of her dairy; besides, being large and numerous, they foul and injure the after-grass by rotting amongst it. Close groves are the only proper situation for the Ash; its uses require a length and cleanness of grain; and it would be well for the occupiers of land, and, indeed, for the community at large, if a severe penalty was laid upon planting it in any other situation. To enumerate the *Uses* of the Ash would require a separate volume: in this point of view it undoubtedly stands next to the Oak: The Farmer would find it difficult to carry on his business without it:
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and, indeed, the cooper and the coach-maker would be equally at a loss with the wheel-wright, should a scarcity of Ash take place; and we know of no species of timber so likely to be worn out in this country as the Ash. The just complaints of the Husbandman are expelling it very properly from our hedges; and we are concerned to see, amongst the numerous plantations which have of late years been made, so few of this necessary tree: it is therefore more than probable that no tree will pay better for planting; not, however, in single trees and hedge-rows, but in close plantations, in the manner which will be pointed out when we come to speak generally of WOODLANDS.

The method of PROPAGATING the Ash is from seeds; which are peculiarly prone to vegetation, and frequently catch under or near the tree they are produced upon, from whence tolerable plants may sometimes be collected; but in general they are either cropt by cattle, or are drawn up slender and ill-rooted, and seldom make so good plants as those raised by the gardener's assistance in a prepared seed-bed. EVELYN directs us to gather the keys from a young thriving tree in October or November, and having laid them to dry, sow them "any time betwixt then and Christmas; but not altogether so deep as your former masts." (meaning those of Beech, Hornbeam, &c.) "Thus they do in Spain, from whence it were good to procure some of the keys from their best trees." He recommends the young plants' standing two years in the seminary, and cautions us, in removing them into the nursery, "not to cut their head at all, which being young is pithy, nor by any means the fibrous part of the roots; only that down-right or tap-root, which gives our husbandmen so much trouble in drawing, is to be totally abated; but this work ought to be in the increase of October or November, and not in the spring. We are, as I told you, willing to spare his head rather than the side branches (which whilst young may be cut close) because being yet young, it is but of a spongy substance; but being once fixed, you may cut him as close to the earth as you please; it will cause him to shoot prodigiously, so as in a few years to be fit for pike-staves."—"Young Ashes are sometimes in winter frost-burnt, black as coals; and then to use the knife is seasonable, though they do commonly recover of themselves slowly." He adds, "You may accelerate their springing by laying the keys in sand, and some moist earth, *stratum super*

super stratum ;” but does not say that this preparation will cause them to vegetate the first spring. MILLAR says, “ the seeds should be sown as soon as they are ripe, and then the plants will come up the following spring ; but if the seeds be kept out of the ground till spring, the plants will not come up ’till the year after.”—“ If they make good progress in the seed-bed, (he says) they will be fit to transplant by the following autumn,”—“ as soon as their leaves begin to fall.” Great care (he says) is necessary in taking them up : they should not be drawn, but taken up with a spade ; clearing the whole bed at once, placing the larger together in rows, and the smaller by themselves. “ The rows should be three feet asunder, and the plants a foot and a half distance in the rows : in this nursery they may remain two years, by which time they will be strong enough to plant where they are to remain ; for the younger they are planted the larger they will grow.”—HANEURY is very deficient upon the subject of raising Ashes in the nursery way : he does not even tell us the depth at which the keys are to be sown ; nor, except in general terms, when they are to be sown ; namely, “ soon after they are gathered.”—We beg leave, however, to differ from these three great authorities. Instead of sowing the keys in autumn, presently after they are gathered, we venture to recommend their being sown in the spring, in the first favourable opportunity in February or March ; for being sown in autumn some few may, and in general will, vegetate the first spring, whilst much the greatest part will lie in the ground until the spring following : the few that come up will be an incumbrance upon the beds, and will render the expence of clearing them the first summer unnecessarily great ; whereas, on the contrary, if the sowing be deferred ’till spring, the hoe and rake will have free range over the beds, and the expence of cleaning them the first summer will be comparatively trifling. If the keys be well cured by spreading them thin in an airy place, and keeping them turned for a few days after gathering, they may be kept in a heap (moving them now and then) until spring, with safety. The depth proper for sowing Ashen keys is from one inch to an inch and a half or two inches, according to the stiffness or the lightness of the soil of the seed-bed. If they be sown too deep in a close-textured soil, they will be apt to be smothered ; and if too shallow in a porous one,

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the drought has too much power over them, and they are liable to be disturbed by the hoe and rake in clearing them the first summer after sowing. Upon the approach of the second spring, the surface of the beds should be made as light and pulverous as possible, in order, to give to the embryo plants a free admission of air, and to facilitate their rising : if part of the stale mould be raked off, and a little fresh earth be sifted over in its stead, it will add considerable vigour to the young plants ; which may be removed into the nursery whenever the crowdedness of the beds, the strength of the plants, or the convenience of the planter, may render it requisite. For raising groves of Ash see WOODLANDS.

There are three *Varieties* of the Common Ash : The *Silver-striped*; the *Gold-striped*; and the *Yellow-coloured Ash*. These *varieties* may be continued by *budding*.

EVELYN tells us, that " Ash may be propagated from a bough *slipt* off with some of the old wood, a little before the bud swells, but with difficulty by *layers*."

The Ash will thrive in almost any soil ; but delights most in a moist situation, so that it stand above the level of stagnant water ; in marshes, half-drained bogs, and by the sides of rivers it flourishes extraordinarily, outgrowing even many of the aquatics themselves.

2. The FLOWERING ASH. Of this species there are two kinds or *varieties* : The *Virginia Flowering Ash* ;—and the *Dwarf Ash of Theophrastus*.

The *Virginia Flowering Ash* when in blow is inferior in beauty to few of our flowering trees. It will grow to near thirty feet in height. The branches of this sort, in the winter, have nearly the same appearance with the Common ; only they are, especially the youngest, more inclined to a black cast : The buds also, which will begin to swell in the autumn, are of that hue. The branches will not burn, when green, so well as those of the Common Ash. The leaves are of a fine green, smooth, serrated, and consist of about three or four pair of folioles, placed a good way asunder along the mid-rib ; and they are usually terminated by an odd one. The mid-rib is long, but not straight ; swelling where the leaves, which fall off early in the autumn, come out. The flowers are white, produced in May, in large bunches, at the ends of the branches. HANBURY says, " I have had this tree,
the

the second year from the bud, produce, on the leading shoot, a tuft of flowers; and although this is not common, yet, when it gets to be about ten feet high, almost every twig will be terminated with them. The flowers exhibit themselves not in a gaudy dress, but in a loose easy manner, all over the tree, which, together with the green leaves peeping from amongst this white bloom, makes the appearance extremely pleasing. I have never yet known the flowers to be succeeded by seeds."

Dwarf Ash of Theophrastus is, as the name imports, a low tree for the Ash tribe; about fourteen or fifteen feet is the height it generally aspires to. The branches are smooth, and of a darkish green. The leaves are pinnated, of a dark green, and serrated on the edges, but proportionably smaller than those of the Common Ash. The flowers of this sort make no show, though they are possessed of the petals necessary to complete a flower, which are denied the Common Ash.

3. AMERICAN ASH. The varieties of this species are, Manna Ash, White Ash, Red Ash, Black Ash, and New-discovered Ash.

Manna Ash will grow to about twenty feet high. It will sometimes shoot eight feet the first year from the bud, though it seldom shoots more than two feet in a summer afterwards. The bark of the young shoots is smooth, of a brownish-green, and has a few greyish spots. The leaves are composed of four or five pair of folioles, placed on a straight mid-rib; they are of a fine pleasant green, and more acutely and deeply serrated than any of the other sorts. The flowers make no show: They are partly the colour of those of the Common Ash, and are produced, like them, early in the spring, before the leaves appear.

White Ash is so called from the whitish colour of the young branches in winter. They are spotted all over with many white spots, which makes their colour that of a lightish-grey. This sort will arrive to about thirty feet high; and the branches are strong, and produced in an irregular manner. The folioles which compose the leaves are of a light green, and obtusely sawed on the edges: They seldom consist of more than three pair, with the usual odd one, which has a long point; and these are placed far asunder, on the mid-rib. These leaves fall off early in the autumn, when they are of a light colour: This, together with the grey branches, make the tree have a whitish look. The flowers are produced

produced in the spring, and make no show. This sort is commonly called the New-England Ash.

Red Ash. The Red Ash is a stronger shooting tree than any of the former, the Common Ash excepted. The branches, which are fewer, are smooth, and the young shoots are of a reddish colour in the autumn. The leaves of this sort make the most noble figure of any of the others; for although they are seldom composed of more than three pair of folioles, besides the odd one, yet these are exceedingly large, especially the odd one, which will be sometimes six inches long, and three and an half broad. The pair next it, also, will be fine and large; though they diminish in size as they get nearer the base of the footstalk. These folioles are distinctly sawed on their edges, are of a fine light-green during the summer, and in the autumn die to a red colour; from which circumstance, together with that of their red twigs, this sort takes the denomination of the Red Ash. It has its seeds very broad, and is commonly called the Carolina Ash.

Black Ash we receive from abroad by that name; though it is difficult to see the propriety of its being so called. The colour of the shoots is nearly like that of the White Ash; but they shoot stronger, and promise to form a larger tree. The leaves are large, and ribbed underneath; of a very dark green, and die to a still darker in the autumn. The folioles are not so large as those of the Red sort, but they quit the tree about the same time. The keys are very broad, and, when we receive them, of a blackish colour.

“*New-discovered Ash* I received from Pennsylvania, where it was discovered growing in the woods near Philadelphia. The keys are very small and flat, and come up in a fortnight after being sown. The young shoots of this sort are covered with the same kind of bark as the White Ash, and the leaves nearly resemble those of the Black Ash, tho’ they are not quite so large.” HANBURY.

All the sorts of foreign Ashes are easily PROPAGATED. I. By seeds, if they can be procured from abroad. We often have them in February; and if they are sown directly, they will sometimes come up the beginning of May, though they generally lie, or at least the greatest part of them, until the spring following. The beds may be made in any part of the garden; and almost any sort of garden-mould, made fine, will do for the purpose. After

the seeds are sown, they will want no other care than weeding, until the plants are a year or two old in the seed-bed, when they may be taken up, and planted in the nursery, at the usual distance of a foot asunder, and two feet in the rows, which will be sufficient for them till they are finally taken up. 2. Budding is another good method of propagating these trees; so that those who have not the convenience of a correspondence in the countries where they grow naturally, should procure a plant or two of a sort, and raise young Ashes of the Common sort for stocks. These stocks should be planted out in the nursery, a foot asunder, and two feet distant in the rows. When they are one year old, and grown to be about the thickness of a bean-straw, they will be of a proper size for working. A little after Midsummer is the time for the operation; and care must be observed not to bind the eye too tight. They need not be unloosed before the latter end of September. In March, the head of the stock should be taken off, a little above the eye; and by the end of the summer following, if the land be good, they will have made surprising strong shoots, many of them six feet or more.

G E N I S T A.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female; the males standing in two divisions: There are fourteen SPECIES; seven of which come under our notice:

1. GENISTA *Tridentata*: The PORTUGAL BROOM; *a. deciduous shrub*; native of Portugal and Spain.
2. GENISTA *Tinctoria*: The DYER'S BROOM, or WOOD-WAXEN; *a. long deciduous shrub*; native of England and Germany.
3. GENISTA *Pilosa*: The BRANCHING BROOM; *a. deciduous shrub*; native of Hungary, Germany, and France.
4. GENISTA *Anglica*: The DWARF ENGLISH BROOM, or PETTY WHIN; *a. deciduous shrub*; natural to moist, heathy grounds in several parts of England.

5. GENISTA

5. *GENISTA Germanica* : The PRICKLY GERMAN BROOM ;
a low deciduous shrub : native of Germany.

6. *GENISTA Hispanica* : The PRICKLY SPANISH BROOM ; a
deciduous shrub ; native of Spain and France.

7. *GENISTA Candicans* : The ITALIAN BROOM, or The CYTISUS OF MONTPELIER ; a low deciduous shrub ; native of Italy and about Montpellier in France.

* * For another Class of BROOMS, see SPARTIUM.

1. The PORTUGAL BROOM is one of the larger growers : It will arrive to be five or six feet high : the branches are very slender, tough, and for the most part three-cornered and jointed. The leaves end in three points, and are small ; though some of them will be produced by threes, in such a manner as to be entirely trifoliate leaves ; whilst others again are often found single. By the beginning of May, this shrub will be in blow. The flowers, which are yellow and of the butterfly kind, are each very large : They grow from the sides of the branches, and wings of the leaves, singly, on short footstalks, and are produced in so free and easy a manner, that they may not improperly be said to have a genteel appearance. They are succeeded by pods, in which are contained kidney-shaped seeds, that will be ripe in autumn.

There are two varieties of this species of Broom, one with larger, the other with narrower leaves, both of which are sought after by those who are fond of having great varieties. These sorts are the least kinds, and require a sheltered situation.

2. The DYER'S BROOM. Of this species there are two varieties, one of which has a narrower leaf, and grows more upright ; the other is more spreading in its branches. Their natural growth is about two or three feet high, and their branches are taper and channelled. The leaves are of a lance-like figure, and placed alternately on the branches. These branches will produce spikes of yellow flowers in June, in such a manner, that though each individual flower is but small for those of the butterfly kind, the whole shrub will appear covered with them to the pleasure of all beholders. These flowers are succeeded by pods, which will have ripe seeds in the autumn.

3. BRANCHING BROOM, as the name indicates, is a plant whose branches spread abroad, and decline towards the earth's

surface. The main stalk is beset all over with tubercles, and the leaves that ornament the slender branches are obtuse and spear-shaped. The flowers, which are yellow, are produced at the ends of the branches, in spikes, in June; and they are exhibited in such profusion as to make a delightful show. They are succeeded by pods that ripen their seeds in autumn.

4. DWARF ENGLISH BROOM has many beauties to recommend it to the gardener, though it grows common in many of our barren heaths. In these places, it goes by the cant name of *Petty-Whin*. All the sorts of our choicest cultivated plants grow wild in some parts of the globe, but lose nothing of their value because they appear thus spontaneously : Why then should this, because it is common in some parts of England, be denied admittance into gardens, especially those that are at a remote distance from such places, as it has many natural beauties to recommend it ? It is a low plant, seldom growing to be more than two feet high ; on which account no garden is so small but it may be there planted, if the commonness of it be no objection to the owner. This shrub has some single, long spines, though the flower-branches are entirely free from them. The leaves, like the shrub, are proportionally small, of a lanceolated figure, and grow alternately on the branches. The flowers, which are of a fine yellow, are produced the beginning of May, in clusters, at the ends of the branches ; and are succeeded by thick short pods, in which the seeds are contained.

5. GERMAN PRICKLY BROOM will grow to be about a yard high. The shrub is armed with many compound spines ; the branches are slender and numerous, though those that produce the flowers are entirely free from spines. The leaves of this sort, also, are small, and of a lanceolate figure, and grow alternately on the branches. The flowers are produced in plenty at the ends of the branches, in June : They are of the colour and figure of the others, and are succeeded by pods, in which the seeds are contained.

6. PRICKLY SPANISH BROOM will grow to be five or six feet high. This shrub is possessed of many compound spines ; though the branches that produce the flowers are entirely free from them. The leaves are exceeding narrow, many of them being no wider than a thread, but very hairy. The flowers are yellow,

yellow, produced in May, in clusters, at the ends of the branches; and are succeeded by hairy compressed pods, in which the seeds are contained.

7. ITALIAN BROOM rises, with an erect, shrubby, branching, striated stalk, to the height of about a yard. The leaves are trifoliate, oval, and hairy underneath. The flowers come out on leafy foot-stalks, from the sides of the branches: They are of a bright yellow colour, appear in June, and are succeeded by hairy pods, containing ripe seeds, in September.

The best way of PROPAGATING all these sorts is by seeds; and if these are sown soon after they are ripe, they will come up earlier in the spring, and make better plants by the autumn. They should only stand one year in the seed-bed before they are transplanted. They should be taken up in the spring, and planted out finally, in ground properly prepared for such small plants; for the less they are removed, so much the faster will they thrive; as they naturally grow with long strong stringy roots, that do not love to be disturbed; on which account, if places in the plantations were to be marked out, the mould made fine, a few seeds of the different sorts sown, and sticks set as guides to prevent their being hoed or dug up; plants that have been thus raised, without removing, will shoot stronger, and flower better, than any that have been brought from the seed-bed or nursery. After they are come up, if there be too many in a place, the weakest may be drawn out, and only two or three of the strongest left, which will cause them to flower better and stronger.

G L E D I T S I A.

LINNEAN Class and Order, *Polygamia Distica*: Hermaphrodite flowers and male flowers upon one plant, and female flowers upon a different plant. There are two Species: one of them a Shrub-plant; the other

GLEDITSIA Triacanthos: The TRIPLE-THORNED ACACIA; a deciduous tree; native of Virginia and Pennsylvania.

The GLEDITSIA. Its growth is naturally upright, and its trunk is guarded by thorns of three or four inches in length, in

a remarkable manner. These thorns have also others coming out of their sides at nearly right angles : Their colour is red. The branches are smooth, and of a white colour. These are likewise armed with red thorns, that are proportionally smaller : They are of several directions, and at the ends of the branches often stand single. The young shoots of the preceding summer are perfectly smooth, of a reddish green, and retain their leaves often until the middle of November. Although there is a peculiar oddity in the nature and position of the spines, yet the leaves constitute the greatest beauty of these trees : They are doubly pinnated, and of a delightful shining green. The pinnated leaves that form the duplication, do not always stand opposite by pairs on the middle rib ; the pinnæ of which they are composed are small and numerous ; no less than ten or eleven pair belong to each of them ; and as no less than four or five pair of small leaves are arranged along the middle rib, the whole compound leaf consists often of more than two hundred pinnæ of this fine green colour : They sit close, and spread open in fine weather ; though during bad weather they will droop, and their upper surfaces nearly join, as if in a sleeping state. The flowers are produced from the sides of the young branches, in July : They are a greenish katkin, and make little show ; though many are succeeded by pods, that have a wonderful effect ; for these are exceedingly large, more than a foot, sometimes a foot and a half in length, and two inches in breadth, and of a nut-brown colour when ripe ; so that the effect they occasion, when hanging on the sides of the branches, may easily be guessed.

There is a *variety* of this species, with fewer thorns, smaller leaves, and oval pods. It has nearly the resemblance of the other ; though the thorns being not so frequent, and the pods being smaller, each containing only one seed, this sort loses that singular effect which the other produces by them.

The PROPAGATION of these trees is not very difficult. We receive the seeds from America in the spring, which keep well in the pods, and are for the most part good. They generally arrive in February ; and, as soon as possible after, they should be sown in a well-sheltered warm border of light sandy earth. If no border is to be found that is naturally so, it may be improved by applying drift sand, and making it fine. The seeds should be sown about half an inch deep ; and they will for the most part
come

come up the first spring. If the summer should prove dry, they must be constantly watered; and if shade could be afforded them in the heat of the day, they would make stronger plants by the autumn. A careful attention to this article is peculiarly requisite; for as the ends of the branches are often killed, if the young plant has not made some progress, it will be liable to be wholly destroyed by the winter's frost, without protection: And this renders the sowing the seeds in a warm border, under an hedge, in a well-sheltered place, necessary; for there these shrubs will endure our winters, even when seedlings, and so will require no farther trouble; nay, though the tops should be nipped, they will shoot out again lower, and will soon overcome it. It will be proper to let them remain two years in the seed-bed, before they are planted out in the nursery. The spring is the best time for the work. Their distances should be one foot by two; the rows should be dug between every winter; and, being weeded in summer, here they may remain, with no other particular care, until they are set out to remain. These trees are late in the spring before they exhibit their leaves, but keep shooting long in the autumn.

G L Y C I N E.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males rising in two divisions, and one female. There are fourteen SPECIES; five of which have been enured to the open air of this country.

1. GLYCINE *Frutescens*: The CAROLINA KIDNEY BEAN; a climber; native of Carolina and Virginia.

2. GLYCINE *Apios*: The ASH-LEAVED MILK-VETCH; a climber; native of Virginia.

3. GLYCINE *Tomentosa*: The CLIMBING REST-HARROW; a climber; native of Virginia.

4. GLYCINE *Gomosa*: The MARYLAND KIDNEY BEAN; a climber; natural to moist shady places in Virginia.

5. GLYCINE *Monoica*: The VIRGINIA GLYCINE; a climber; native of moist shady places in Virginia.

1. CAROLINA KIDNEY BEAN does not rise by the assistance of clasps, but by the twining branches, which naturally twist round any adjacent tree; nay, if trees are ten feet or more distance from the root of the plant, its branches, being too weak to support themselves, will trail along the ground until they reach these trees, and then they will twine their branches with theirs, and arrive to a great height: Indeed, where trees are near at hand, and they begin by the first spring-shoot to twist about them, they will twine up to them to the height of near twenty feet. This climber is possessed of noble large pinnated leaves, very much like those of liquorice. The folioles are about three pair in number, arranged on their common mid-rib, and they always end with an odd one. Their colour is for the most part of a lightish hoary cast, with a blueish tinge. The flowers are very large and ornamental: Their colour is that of a blueish purple, and their general characters indicate their structure. They are produced from the wings of the leaves, in July and August; and are succeeded by long pods, like Kidney Beans.

This fine climber is easily PROPAGATED, 1. By seeds, if there is a conveniency of procuring them from abroad; for they never ripen with us. In the spring, as soon as we receive them, they should be sown in fine beds of light sandy earth, half an inch deep. They will readily come up, and all summer must have frequent waterings; and if the beds be shaded in hot weather, it will be the better. In winter the beds should be hooped, and covered with mats in frosty weather: And in spring the strongest may be drawn out, which will thin the bed, and make way for the others, which should stand until the next spring. Plants thus drawn should be set in the nursery, at small distances, and in a year or two after, they will be good plants for any place where they are wanted. 2. This plant is also easily increased by layers; for if the young shoots of the preceding summer be laid in the ground in the autumn, by the autumn following they will have struck root; when the best-rooted and strongest layers may be planted out to stand where they are wanted, whilst the weaker, or those with hardly any root, may be set in the nursery, like the seedlings, to gain strength.

2. The

2. The **ASH-LEAVED MILK-VETCH** will twine from six to twelve feet high, according to the nature of the soil; for in a rich fat mould it will grow near double the length it will in a soil of an opposite nature. The stalks die to the ground every autumn: and in the spring new ones are issued forth from the roots, which are composed of many knobs, that encrease in number, the longer the plant is suffered to remain. The leaves somewhat resemble those of the Ash-tree, being pinnated almost in the same manner. The folioles, which consist of three pair besides the odd one, are of an oval lanceolate shape; and being arranged opposite along the mid-rib, and terminated with a single one, form a fine leaf. The flowers are produced from the sides of its twining stalks, in August. They grow in small spikes, are of a reddish colour, and being of the butterfly or pea-blossomed kind, make a pretty good show. These flowers are sometimes succeeded by pods, which never perfect their seeds with us.

3. **CLIMBING REST-HARROW** is but a low plant for a climber, seldom arising higher than five feet. The stalk dies to the ground every autumn; and the loss is repaired by a natural succession presented from the root every spring. The leaves are trifoliate and very downy. Every one knows the beauty that arises from leaves of an hoary nature, amongst the variety of greens of different tinges. The flowers are of the pea-bloom kind, and are produced in short bunches, in June and July, from the sides of the stalks. They are of a yellow colour, and, though they are rather small in proportion, are very beautiful. They are succeeded by pods, in which two seeds only are contained, and which will be ripe with us in September.

4. The **KIDNEY BEAN PLANT OF MARYLAND** has a slender, annual, twining stalk, which will arise to be three or four feet high. The leaves are trifoliate, and sit close to the stalks. They are hairy, and the folioles are of an oval lanceolate shape; and being of a good green, make the whole ornamental enough. But the greatest ornament this plant receives is from the flowers, which are also of the pea-bloom kind, and are of a clear blue. They are produced in June, from the sides of the stalks, in fine
recurved

recurved bunches ; and these are succeeded by pods, which will have ripe seeds in August or September.

5. The VIRGINIAN GLYCINE will arise with its slender branches to a degree higher than the other. The stalks are hairy, and the leaves with which they are ornamented are trifoliate and naked. The flowers are produced from the sides of the stalks, in June and July. They grow in pendulent bunches, and are also of the butterfly kind. They are very beautiful, and each exhibits a variety of colours ; for the wings and the keel are white, whilst the standard is of a pale violet colour. These flowers are succeeded by compressed half-rounded pods, hanging by lengthened peduncles ; and the seeds will often be ripe in September.

All these sorts are PROPAGATED by the seeds ; and this may be in the places where they are to remain, or in warm well-sheltered beds, or in pots, to be housed for the first winter, if it should prove severe. They will very readily come up ; and if they are sown in the open ground, the beds should be hooped at the approach of winter, to be covered with mats, in case it should prove bad. It will be proper to plunge those sown in pots, immediately after, up to the rims in the natural mould ; this will keep them cool and moist : At the approach of hard frosts, they may be removed into the greenhouse ; and in spring may be turned out into the places where they are designed to remain. Those in the beds, also, should be transplanted to such places : Their after-management will be only to part the roots about every three or four years ; and by this method also they may be all encreased. The spring is the best time for parting the roots ; and by this way they may be multiplied fast enough. As to the first sort, this method is chiefly practised for its propagation, as it does not ripen its seeds here, unless there is a conveniency of procuring them from abroad. The roots of this sort are composed of several knobs ; and these being taken up and divided readily grow, and become good plants.

These perennials are all proper to be planted amongst shrubs in warm and well-sheltered places ; for they are rather of a tender nature, and are often destroyed by severe frosts. As the stalks are all annual, as soon as they decay at the approach of winter, they should be cut up close to the ground, and cleared off such plants as are near them, by which they have aspired, otherwise

otherwise they will have a dead paltry look; and render the place inelegant; for, even in the dead of winter, neatness and elegance must be observed, which will not only shew a more promising expectation of a resurrection, but the clearing away old stalks, &c. will be better for the plants themselves, as they would in some degree hinder and choke the young shoots as they advance in the spring.

G U I L A N D I N A.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower contains ten males and one female: There are five SPECIES: one of which will stand our winter.

GUILANDINA Dioica: The CANADA NICKAR-TREE; a *deciduous tree or shrub*; native of Canada.

The CANADA NICKAR TREE. The stem is erect, firm, often twenty feet high, and sends forth several branches, which are covered with a smooth, bluish, ash-coloured bark. The leaves are bipinnated; and the folioles are large, smooth, entire, and ranged alternately on the mid-rib. The flowers appear in July or August; but are very rarely succeeded by seeds in England.

This species is PROPAGATED, 1. By seeds, which must be procured from the places where the tree naturally grows. The seeds are very hard, and often lie two years before they make their appearance; so that if they are sown in common ground, the beds must all the time be kept clean from weeds. In the autumn it will be proper to stir the surface of the mould, but not so deep as to disturb the seeds. In the spring the plants will come up: All summer they must be kept clean from weeds, watered in dry weather, and in the autumn the strongest may be planted out in the nursery, at the usual distance, while the weakest may remain another year in the seed-bed to gain strength. The seeds also may be sown in pots, and plunged into a hot-bed: This will bring the plants up the first spring.

After

After they make their appearance, they must be hardened by degrees to the open air. 2. This tree may likewise be propagated by layers. These must be the smaller shoots of the last year's wood. The operation must be performed by making a slit, as is practised for carnations; and the best time for the business is the autumn. 3. By cutting the root, also, this tree may be increased. In order to this, bare away the earth from the top of the root; then with the knife cut off some parts of it, leaving them still in the ground, and only directing their ends upwards: Then cover the whole down lightly with mould. The parts that have been separated will shoot out from the ends, and come up as suckers all round the tree. If dry weather should happen, you will do well to water them all the summer; and in the autumn they may be removed to the place where they are designed to remain; which ought always to be in a light dry soil, in a well-sheltered place.

H A M A M E L I S.

LINNEAN Class and Order, *Tetrandria Digynia*: Each flower contains four males and two female: There is only one SPECIES:

HAMAMELIS Virginica: The DWARF HAZEL; a low deciduous shrub; native of Virginia.

The DWARF HAZEL is a shrub of about four feet in growth, and will constitute a variety among other trees, though there is no great beauty in it, except what is afforded by the leaves. These are placed on the branches, which are numerous and slender, in an alternate manner, and much resemble those of our Common Hazel, that are known to all. The flowers make no show; but perhaps the time of their appearing, which happens in winter, in November or December, when they will be produced in clusters from the joints of the young shoots, may make the plant desirable to some persons. Nothing farther need be said to the gardener concerning this shrub, which Nature seems
to

to have designed for the stricter eye of the botanist ; so that we shall proceed to its culture.

It is PROPAGATED, 1. By seeds, which must be procured from America, for they do not ripen here. An easterly border, well defended from the north and westerly winds, is best for their reception ; for these plants, when seedlings, are rather tender ; when older, they are hardy enough. They will grow in almost any kind of good garden-mould, made fine ; and they should be covered about half an inch deep. They will not come up before the second, and sometimes the third spring. 2. This tree may also be PROPAGATED by layers ; so that whoever has not the conveniency of procuring the seeds from abroad, having obtained a plant or two, may encrease them this way. The operation should be performed on the twigs of the preceding summer's shoot : These should be slit at the joint, and a bit of chip, or something, put in to keep the slit open. If these stools stand in a moistish place, which these shrubs naturally love, and are layered in the autumn, they will have shot root by the autumn following ; and may be then either planted out in the nursery, or where they are to remain.

H E D E R A.

LINNEAN Class and Order, *Pentandria Monogynia* : Each flower contains five males and one female : There are only two SPECIES :

1. *HEDERA Felix* : The COMMON IVY ; a well-known *evergreen climber* ; native of England and most parts of Europe.

HEDERA Quinquifolia : The DECIDUOUS IVY, or the VIRGINIAN CREEPER ; a *deciduous climber* ; native of Virginia and Canada.

1. The COMMON EVERGREEN IVY. Besides the genuine species there are three *varieties* : namely, the Yellow-berried Ivy ; the Gold-striped Ivy ; and the Silver-striped Ivy.

The

The *Common Ivy* is well known all over England, and how naturally it either trails on the ground, or rises with walls or trees, striking its roots all along the sides of the branches for its support. It chiefly delights in old houses or walls; and when it has taken possession of any outside of the outer buildings, will soon cover the whole. It will make surprising progress when it reaches old thatch; and will soon, if unmolested, climb above the chimney itself. Neither are old houses or walls what it chiefly likes to grow on; for it will strike its roots even into the bark of trees. But above all, it chiefly affects old rotten trees or dodderels; for these it will almost cover, and rear its head with a woody stem above the trunk, and will produce flowers and fruit in great plenty. There, as well as on the sides of old walls and buildings, it becomes a habitation for owls and other birds. The usefulness of Ivy, then, in Gardening, is to over-run caves, grottos, old ruins, &c. to which purpose this plant is excellently adapted; and were it not for its commonness, it would be reckoned inferior to few evergreens; for the older grey stalks look well, whilst the younger branches, which are covered with a smooth bark of a fine green, are very beautiful. The leaves, also, are of a fine strong green, are large and bold, and make a variety among themselves; for some are composed of lobes, whilst others are large, and of an oval figure. The flowers are nothing extraordinary, unless it be for the figure in which they grow. This is strictly the *Corymbus*; and all flowers growing in such bunches are called by Botanists *Corymbose Flowers*. The fruit that succeeds them, however, is very beautiful; for being black, and growing in this round regular order, and also continuing on all winter, it makes the tree singular, and, were it not for its commonness, desirable. It is observable, if Ivy has no support, but is left to creep along the ground only, it seldom flowers; but having taken possession of rails, hedges, trees, or buildings, from these it sends out woody branches, which produce the flowers and fruit.

The *Yellow-berried Ivy* differs from the Common Ivy in that its berries are yellow. It grows common in the islands of the Archipelago; and is at present rare with us. This is the *Hedera Poetica* of old authors.

The

The *Gold-striped Ivy* is the Common Ivy with yellow-blotched leaves ; though it is observable, that this sort has very little inclination to trail along the ground, or up trees or buildings, as it naturally rises with woody branches, and forms itself into a bushy head : So that this sort may be planted amongst variegated trees, or evergreens, as a shrub. Let it be set where it will, it is very beautiful ; for the leaves will be a mixture of yellow and green ; and sometimes they will have the appearance of being all yellow, thereby causing a very singular and striking look at a distance.

The *Silver-striped Ivy* is a variety of our Common sort, though the branches are naturally more slender. The leaves also are smaller ; and of all the sorts this creeps the closest to walls or buildings, or is of strength sufficient to form its ligneous branches, when got to the top, to any head. " This plant (continues HANSBURY, with whom it seems to be a very great favourite) is of all others to be planted against walls for ornament ; for its leaves are very finely striped with streaks of silver, and the sets being first planted at small distances, will soon cover them all over, so as to have a delightful look. A more beautiful ornament to a wall cannot be conceived, than what belongs to a wall of Charles Morris, Esq. of Loddington. It consists of these plants, which having first taken properly to the ground, and afterwards to the mortar-joints, have so over-spread the surface as to be a sight, of the kind, superior to any I ever beheld ; and I am persuaded there are few people of taste, who had seen any thing of this nature, but would be induced to have the like, even against their choicest walls. And here let it always be remembered, that whereas our Common Green Ivy is to hide and keep from view all old and unsightly walls, so the Silver-striped Ivy is to ornament all walls, even those of the finest surface."

2. The DECIDUOUS AMERICAN IVY is a real species of the *Hedera*. It sheds its leaves in the autumn ; and will spread itself over pales, walls, buildings, &c. in a very little time. It puts forth roots at the joints, which fasten into mortar of all sorts ; so that no plant is more proper than this to hide the unsightly surface of an old barn end, or any other building which cannot be concealed from the view by trees being planted at some distance ;

distance ; as in one year it will shoot often near twenty feet, and let the building be ever so high, will soon be at the top of it. The bark on the shoots is smooth, and of a brown colour ; and the buds in the spring, as they are beginning to open, will be of a fine red. The leaves are large and well-looking. Each is composed of five smaller, which are serrated at their edges. The common foot-stalk is proportionably strong, and they die to a fine red in the autumn.

All the sorts are to be PROPAGATED by cuttings ; for these being set any time in the winter, in almost any soil, will strike root by the autumn following ; and if they are permitted to remain another year, they will then be strong plants, fit to be set out for good. The Common Ivy is also to be raised from seeds.

H I B I S C U S.

LINNEAN Class and Order *Monadelphia Polyandria* : Each flower contains numerous males and one female ; the males being joined together at the base. There are thirty-seven SPECIES ; one of which adds great beauty to our grounds and shrubberies, in autumn.

HIBISCUS *Syriacus* : The ALTHEA FRUTEX, or the SYRIAN MALLOW, or the SYRIAN HIBISCUS ; a *deciduous shrub* ; native of Syria.

The ALTHEA FRUTEX, or the SYRIAN HIBISCUS. Of this species there are several *varieties* :

The *White Althea Frutex*.

Red-flowering Althea Frutex.

Yellow-flowering Althea Frutex.

Pale Purple-flowering Althea Frutex.

Deep Purple Althea Frutex.

All

All these, though supposed to be only sorts of one species of *Hibiscus*, afford wonderful varieties to the gardener. They will grow to the height of about six feet. Their branches are not very numerous; they are smooth, and of a whitish colour. The leaves are of a pleasant green, and grow on short footstalks, irregularly on the branches. They are of an oval, spear-shaped figure, serrated at the edges, and many of them are divided at the top into three distinct lobes. The flowers have longer footstalks than the leaves, and come out from the sides of the young shoots with them; inasmuch that the young shoots are often garnished with them their whole length. The Common Mallow produces not a bad flower, did not its commonness render it unnoticed. The flowers of these species somewhat resemble it in shape, but by far exceed it both in size and splendor of colour; and each has a greater variety; inasmuch that though they are termed Red, White, Purple, &c. from the colour of the upper part of the petals, yet the lower part of all of them is very dark, and seems to shoot out in rays in directions towards the extremity of each petal. August is the month we may expect to be entertained with this bloom; though in starved cold soils, the flowers rarely ever appear before September.

This beautiful shrub may be PROPAGATED by two methods.

1. By seeds, which we receive from abroad. These should be sown in a bed of light sandy earth; and if it is not naturally so, drift sand must be added; and if some old lime-rubbish, beat to powder, be also mixed with it, it will be the better. Having worked them all together, and made the bed smooth and fine, the seeds should be covered about a quarter of an inch deep. The situation of this bed must be in a warm well-sheltered place, that the young plants may not suffer by frosts the first winter. Any time in March will do for the work; and in about six weeks the young plants will come up. In the heat of summer, it will be proper to shade them; and if constant waterings are afforded them in dry weather, they will acquire greater strength and vigour by the autumn. At the beginning of November, besides the natural shelter of these beds, it will be proper to prick furze-bushes at a little distance all around, to break the keen edge of the black frosts, which otherwise would destroy many of them the first winter: After that, they will be hardy enough for our severest weather. They should stand in these seed-beds two years,

and all the while be weeded and watered in dry weather. In spring is the best time for planting them out in the nursery where no more distance need be allowed them than one foot. 2. These plants may be propagated by layers; for which purpose the stools should be headed near the ground, to throw some good strong shoots the following summer. These should be laid in the ground, the bark being broken, or cut at on two of the joints, and they will have struck root by the autumn following, when they may be taken up and planted in nursery, like the seedlings; and a second operation performed the stools. 3. These plants may be raised also by cuttings; by planting them in a shady border, many of them will grow though this is not a certain method.

H I P P O P H A E.

LINNEAN Class and Order, *Dioecia Tetrandria*: Male flowers containing four stamens, and female flowers containing one upon distinct plants: There are only two SPECIES:

1. HIPPOPHAE *Rhamnoides*: The EUROPEAN SEA-BUCKTHORN; a tall deciduous shrub; native of the sea-shores of country and most parts of Europe.

2. HIPPOPHAE *Canadensis*: The AMERICAN SEA-BUCKTHORN; a tall deciduous shrub; native of Canada.

1. The EUROPEAN SEA-BUCKTHORN will grow to the height of about twelve feet, and sends forth numerous branches in irregular manner. Their colour is that of a dark brown; on them a few strong and long sharp spines are found, nearly those of the Common Buckthorn. This tree is chiefly admired for its singular appearance in winter; for the young shoots the preceding summer are then found thickly set on all sides, large, turgid, uneven, scaly buds, of a darker brown, or rather chocolate colour, than the branches themselves: These give the tree such a particular look, that it catches the attention, and causes it to be enquired after, as much as any shrub in the garden.

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tation. About the end of February these turgid buds will be much larger; and a little before their opening, upon striking the tree with a stick, a yellow dust, like brimstone, will fall from them. Though some think the beauty of this shrub to be diminished after the leaves are opened, yet these have their good effect; for they are of two colours: Their upper surface is of a dark green, their under hoary; they are long and narrow, entire, have no footstalks, nearly like those of the rosemary, though rather longer and broader; and they are placed alternately all around, without any footstalks, on the branches. They continue on the tree green and hoary late, sometimes until the beginning of December, and at length die away to a light brown. The flowers are of no consequence to any but Nature's strict observers. They are produced in July, by the sides of the young shoots; the male flowers appear in little clusters, but the females come out singly. They are succeeded by berries, which, in the autumn, when ripe, are either of a red or yellow colour, for there are both those sorts.

2. CANADA SEA-BUCKTHORN will grow to about the same height as the other species; nearly the same dark brown bark covers their branches; and, except the figure of their leaves, which are oval, this plant differs in few respects from the European Sea-Buckthorn.

Both these sorts may be PROPAGATED, 1. By cuttings of the young shoots, planted in a shady border, in October; though the most certain method is by layers. If the trees to be encreased are of some years growth, the ground should be dug and made fine, as well as cleared of the roots of bad weeds, &c. all round. The main branches may be plashed, and the young twigs that form the head laid in the ground; taking off their ends with a knife, that they may only just peep. If this work be performed in the autumn, they will be good-rooted plants by the autumn following, when they may be taken off, and either planted in the nursery, or where they are to remain. 2. Both these sorts are subject to spawn, and throw out many suckers, sometimes at a good distance from the plants; so that by this method they propagate themselves.

H Y D R A N G E A.

LINNEAN Class and Order, *Decandria Digynia*: Each flower contains ten males and two females: There is only one SPECIES:

HYDRANGEA *Arborescens*: The HYDRANGEA; a *deciduous* shrub; native of Virginia.

The HYDRANGEA seldom grows to more than a yard or four feet high, and affords as much pleasure to those who delight in fine flowers as it does to the botanist. It forms itself into no regular head; but the branches of which it is composed shoot chiefly from the root. These, when young, are four-cornered and green; when old, of a fine brown colour: They are very large for their height, as well as very full of pith. The leaves are a great ornament to these plants; being also very large, and having their upper surface of a fine green, and their under rather downy. Their figure is nearly shaped like a heart, but ends in an acute point; and their size will prove according to the nature of the soil they grow in. On a dry soil, they will often be no more than two inches long, and scarcely an inch and a half broad; but, in a moist rich soil, they will frequently grow to near four inches long, and two and three quarters broad in the widest part. They are serrated at their edges, and are placed on long footstalks, opposite to each other, on the branches. But the flowers constitute the greatest beauty of these plants; for they are produced in very large bunches, in August: Their colour is white, and the end of every branch will be ornamented with them. They have an agreeable odour, and make such a show all together as to distinguish themselves even at a considerable distance. With us, however, they are seldom succeeded by any seeds.

The PROPAGATION of this plant is more easy than to keep it within bounds; for the roots creep to a considerable distance, and send up stalks which produce flowers; so that these being taken off, will be proper plants for any place. It likes a moist soil.

H Y P E R I C U M.

LINNEAN Class and Order, *Polyadelphia Polyandria* : Each flower contains many males and about three females ; the males being joined at the base in many sets : There are forty SPECIES ; two of which are proper for ornamental shrubberies.

1. *HYPERICUM Hircium* : The SHRUBBY ST. JOHN'S WORT, or the STINKING or GOAT-SCENTED ST. JOHN'S WORT ; a *deciduous shrub* ; grows naturally by the sides of rivers in Sicily, Calabria, and Crete.

2. *HYPERICUM Canariense* : The CANARY ST. JOHN'S WORT ; a *deciduous shrub* ; native of the Canaries.

1. The SHRUBBY ST. JOHN'S WORT. Of this there are several *varieties*. The Common is a beautiful shrub, near four feet in height. The branches are smooth, of a light brown, and come out opposite by pairs from the side of the strongest stalks ; and these also send forth others, which alternately point out different directions. The leaves are of an oblong, oval figure, grow opposite by pairs, and sit very close to the stalks. These being bruised, emit a very strong disagreeable scent. The flowers are yellow, and make a good show in June and July ; for they will be produced in such clusters, at the ends of the young shoots, that the shrub will appear covered with them. They are succeeded by oval black-coloured capfuls, containing ripe seeds, in the autumn.

There is a *variety* of this species, which will grow to be eight feet high : The stalks are strong, the leaves broad, and the flowers large ; and being produced in great plenty, causes it to be a valuable shrub for the plantation. There is another variety with variegated leaves, which is admired by those who are fond of such kinds of plants. There is also a variety dispossessed of the disagreeable smell, which causes it to be preferred by many on that account.

2. The CANARY ST. JOHN'S WORT is a shrub of about six or seven feet high : The branches divide by pairs, and the leaves, which are of an oblong figure, grow opposite by pairs, without any footstalks. The flowers come out in clusters from the ends of the branches : They are of a bright yellow, have

numerous stamina, which are shorter than the petals, and three styles. They appear in July and August, and are succeeded by oval roundish capsules, containing the seeds.

No art need be used in PROPAGATING these shrubs; for, 1. Having obtained a plant or two of each, they will afford encrease enough by suckers. Having stood about three years, the whole of each plant should be taken up, and the suckers and slips with roots that this may be divided into, may reasonably be supposed to be twenty in number. The strongest of these may be planted where they are to remain, while the weaker may be set out in the nursery to gain strength. 2. These shrubs may also be propagated by seeds, which ripen well with us, and will come up with common care; nay, they will often shed their seeds, which will come up without sowing, especially the last sort.

J A S M I N U M.

LINNEAN Class and Order, *Diandria Monogynia*: Each flower contains two males and one female: There are six SPECIES; three of which are hardy enough for our purpose.

1. *JASMINUM Officinale*: The COMMON WHITE JASMINE; a deciduous shrub or climber; native of India.

2. *JASMINUM Fruticans*: The COMMON YELLOW JASMINE; a deciduous shrub or climber; native of the South of Europe, and of the East.

3. *JASMINUM Humile*: The ITALIAN JASMINE; a deciduous shrub or climber; native of Italy.

1. The COMMON WHITE JASMINES have usually been planted against walls, &c. for the branches being slender, weak, and pithy, by such assistance they have arrived to a good height; though this shrub is not the most eligible for that purpose, as its branches, which are numerous, are covered with a brown dirty-looking bark, and afford shelter for snails, spiders, and other insects, which in winter, when the leaves are fallen, will give

give them an unsightly look; and if they are clipped and kept up to the wall, as the flowers are produced from the ends and wings of the shoots, these must of course be sheared off; so that little bloom will be found, except what is at the top of the tree. It is not meant, however, to dissuade those people who are fond of it from planting it against walls: It naturally requires support, though attended with those defects. It may nevertheless be planted among shrubs in the shrubbery, to appear to great advantage. It should keep company with the lower kinds of shrubs; and whenever the branches grow too high to sustain themselves without nodding, and discover their rusty stems, these should be taken off from the bottom. There will always be a succession of young wood; and these young shoots, which are covered with a smooth bark, of a delightful green colour, also exhibit the leaves and bloom. The leaves are pinnated, and very beautiful: They grow opposite by pairs; and the folioles are usually three pair in number, besides the odd one with which each leaf is terminated. They are all of a dark strong green colour, are pointed, and the end one is generally the largest, and has its point drawn out to a greater length. The flowers are produced from the ends and joints of the branches, during most of the summer months: They are white, and very fragrant; but are succeeded by no fruit in England.

There is a *variety* of this sort with yellow, and another with white striped leaves.

2. The **YELLOW JASMINE** is often planted against walls, pales, &c. as the branches are weak and slender; and it will grow to be ten or twelve feet high, if thus supported. It may, however, be planted in shrubbery-quarters, in the same manner as the other. The young shoots are of a fine strong green colour, angular, and a little hairy. The leaves are tritolate, though sometimes they grow singly: They are placed alternately on the branches, are of a thick consistence, smooth, and of a fine deep green colour. These leaves, in well-sheltered places, remain until the spring before they fall off; so that this plant may not improperly be ranked among evergreens, especially as the young shoots are always of a strong green. The flowers are yellow, and do not possess the fragrance of the preceding species: They are produced in June, and the blow is soon over; but they are succeeded by berries, which, when ripe, are black.

These have occasioned this sort to be called by some persons the Berry-bearing Jasmine.

3. The ITALIAN JASMINE is, of all the sorts, best adapted to a shrubbery, because it loses part of its beauty if nailed to a wall. It is naturally of lower growth, and the branches are stronger, fewer in number, able to support themselves in an upright position, and are angular. The bark is smooth, and of a fine deep green colour. The leaves grow alternately : They are chiefly trifoliate, though some pinnated ones are found upon this shrub. The folioles are smooth, and of a fine strong green : They are much broader than the preceding sorts, and often continue till spring before they drop off ; so that this shrub, on account of the beautiful green colour of the young shoots, might have a place among evergreens. The flowers are yellow, and much larger than those of the other sorts : They are produced in July, and are sometimes succeeded by berries ; but these seldom if ever come to perfection. This species is very hardy, and has grown in the most exposed places, resisting the severest frosts for many years.

Little need be said concerning the PROPAGATION of these plants ; for they will all grow by layers or cuttings ; so that if either way be pursued in the winter, you will have plenty of plants by the autumn following. The cuttings, however, must have a moist good soil, and should be shaded and watered as the hot weather comes on, the beginning of summer. The Common Yellow Jasmine may be propagated by the seeds ; but it naturally sends forth such plenty of suckers as to render it needless to take any other method for its increase ; for these being taken off, will be good plants ; nay, if it is planted in borders, they must be annually taken for use, or thrown away, or they will overspread every thing that grows near them. The Yellow and White striped-leaved Jasmynes are propagated by grafting, budding, or inarching, into stocks of the Common White : They are rather tender, especially the White, therefore must have a warm situation. The Yellow-striped is the most common and least beautiful, and may be increased by layers and cuttings, like the plain sort.

I L E X.

LINNEAN Class and Order, *Tetrandria Tetragynia*: Each flower contains four males and four females: There are three SPECIES; one of Europe, one of Asia, and one of America: the last has been introduced into our gardens and shrubberies, making with our own Holly two species.

1. *ILEX Aquifolium*: The COMMON HOLLY, or the EUROPEAN HOLLY; a well known evergreen tree or shrub; native of most parts of Europe, particularly of England.

2. *ILEX Cassine*: The AMERICAN HOLLY, or the DOGWOOD HOLLY; an evergreen tree or shrub; native of Carolina.

1. The EUROPEAN or COMMON HOLLY will grow to thirty or forty feet high, with a proportionable stem. In its natural soil and situation, namely, a high, chalky, marly, or limestone loam, the stem frequently shoots up naked and silvery, six or eight feet high, supporting a close, snug, elliptical head: This may be called its tree state. But the Holly, almost as frequently, puts on a very different appearance; feathering from the ground and rising with an irregular, loose, elegant outline; forming one of the most Ornamental evergreens which nature has furnished us with. What renders it in this point of view peculiarly valuable,—it is not only highly ornamental in singlets or groups standing in the open air, but will flourish with great beauty under the shade and drip of the more lofty deciduous tribes. Besides, the blushing fruit of the Holly renders it most ornamental at a time when the face of nature is in a manner divested of every other ornament: In this light it is superior to the Box; and, indeed, taken all in all, the Holly is undoubtedly entitled to take rank amongst the first class of Ornaments. In respect of *Utility*, the Holly gives place to the Box; except for the purpose of hedges, and for this purpose it stands unrivalled;—but of this under the Article HEDGES. Its wood, however, is in good esteem among the inlayers and turners; it is the *whitest* of all woods; its colour approaching towards that of Ivory.

The PROPAGATION of the Holly is principally from seeds. EVELYN tells us that young seedlings, collected from the woods, and planted in a nursery, in a few years will make tolerable plants. MILLAR says, the seeds "never come up the first year; but lie in the ground as the Haws do: therefore the berries should be buried in the ground one year, and then taken up and sown at Michaelmas, upon a bed exposed only to the morning sun; the following spring the plants will appear."—"In this seed-bed, he says, the plants may remain two years; and then should be transplanted in the autumn, into beds at about six inches asunder, where they may stand two years longer, during which time they must be constantly kept clean from weeds; and if the plants have thriven well, they will be strong enough to transplant where they are designed to remain; for when they are transplanted at that age, there will be less danger of their failing, and they will grow to a larger size than those which are removed when they are much larger."—He also tells us, "the best time for removing Hollies is in autumn, especially in dry land; but where the soil is cold and moist, they may be transplanted with great safety in the spring; if the plants are not too old, or have not stood long unremoved; for if they have, it is great odds of their growing when removed." HANBURY differs with MILLAR in regard to sowing: he thinks the best way is to sow them as soon as they are ripe, and then, he says, "they will undoubtedly come up the spring twelvemonth following."—"However, he adds, if the seeds have been buried, let them be taken up in October; and having some fine light soil for the seminary, let them be sown half an inch deep, and carefully covered from the mice." He recommends, when the seedlings are two years old, that "in the spring they should be taken out of the beds and planted in the nursery in rows, a foot asunder, and two feet distance between the rows. Here they may stand until they are of a sufficient size to be finally planted out." He follows MILLAR as to the time of transplanting; recommending autumn if the land be naturally dry: but if of a moist nature, he says, "the planter need not be very anxious about the time of the winter in which he makes his plantations of Hollies." It is somewhat extraordinary that men, practical as MILLAR and HANBURY undoubtedly

undoubtedly were, should not have been acquainted with the proper time of removing so prevalent and so useful a plant as the Holly : and it is still more remarkable, that the professional nurserymen of the present day should, in general, be involved in the same darkness. Spring is the very worst time for performing this business ; winter and autumn may be somewhat more eligible ; but SUMMER is of all others the most proper season for transplanting the Holly. At this time of the year, if the plants be young and well rooted, it matters not much how dry the soil is ; for they will, notwithstanding, succeed with great certainty. MILLAR nevertheless is right in saying that large Hollies which have not lately been moved are difficult to transplant ; more especially such as have stood in a thicket, or under the shade of other trees. If, however, even these be taken up with good roots, together with a large quantity of native mould adhering to them ; their heads lessened by pruning them in the conoidic manner, and be planted during the summer months in a well-tempered paste, agreeably to the directions given under the Article TRANSPLANTING, success, though it cannot be insured, may with great probability be expected. Thus far the Common Holly ;—which will be resumed again under the Article HEDGES.

But besides the genuine species, there are of the European Holly almost endless *varieties* : Millar mentions some eight or ten ; and Hanbury enumerates upwards of forty ! Five of them are sufficiently distinct to merit separate descriptions ; the rest, distinguished chiefly by the variegation or mottled appearance of their respective leaves, would only form a long list of uncouth names, wholly uninteresting upon paper, how elegant soever they themselves may appear in a group of Evergreens.

The Smooth-leaved Holly.

The Green-leaved Yellow-berried Holly.

The Box-leaved Holly.

The Hedge-Hog Holly.

The Saw-leaved Holly.

The *Smooth-leaved Holly* resembles in general appearance the Common sort. Of the two it seems to be the strongest shooter, and bids fair for the largest growing tree. The leaves are nearly oval, and most of them are entirely free from prickles, only they
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end in acute points. This sort is commonly called the *Caroline Smooth-leaved Holly*: But it is a native of England, and is found growing amongst the others in many parts.

The *Green-leaved Yellow-berried Holly* differs in no respect from the Common Holly, only the berries are yellow; and as this tree produces berries in plenty, which are thought by most people to be uncommon and curious, this sort, on their account, is deserving of a place, either in small or large gardens, in shrubbery-quarters, or plantations of any kind.

The *Box-leaved Holly* has but little claim to be so called; for though some of the leaves be small, pretty free from prickles, and nearly oval, yet there will be so many nearly as prickly as the Common Holly as to merit no claim to that appellation. The leaves, however, are small; and by them, on that account, the chief variety is occasioned.

The *Hedge-Hog Holly* has the borders of the leaves armed with strong thorns, and the surface beset with acute prickles, a little resembling those of an hedge-hog, which gave occasion to this sort being so called by the Gardeners. This, together with the Striped sorts of it, is justly ranked among our Hollies of the first rate.

The *Saw-leaved Holly* is a kind very different from any of the other sorts. The leaves are of the ordinary length, but very narrow, and of a thick substance. Their edges are formed into the likeness of a saw; though they are not very sharp and prickly. This is a very scarce and valuable Holly, and is by all admired.

These six sorts of themselves form a Collection truly valuable to our evergreen ornamental plantations: if the variegated sorts are also to have a place, which they may properly enough, we introduce then a fresh Collection, which for variety and beauty far exceeds not only the variegated sorts belonging to any one genus, but perhaps all the variegated sorts of trees and shrubs put together.

But let us proceed to the CULTURE of these sorts. We have already shewn how the Common English Holly may be raised from the berry. That method is to be practised, and plenty of that sort may be raised. These are to be stocks, on which

which the others are to be budded or grafted : for though they will take by layers, yet plants raised that way are of little or no value ; and if the berries of the variegated sorts be sown, the plants will come up plain, and be our Common English Holly (tho' from Hedge-Hog berries plants of the Hedge-Hog Holly are frequently raised). By grafting or budding, then, these sorts must be propagated ; and for this purpose young stocks must be raised of the Common Holly, as has been already directed. After these have stood two years in the seed-bed, they should be taken up, have their roots shortened, and be planted out in the nursery, a foot asunder, in rows at two feet distance. The summer following they will probably make few shoots ; but the summer after that, they will shoot strongly ; and when the operation is to be performed by grafting, these will be proper stocks for the purpose by the spring following. The first week in March is a good time for the work. Whip-grafting is the method to be practised ; and it must be performed on the young wood, namely, on that of the preceding summer's shoot. The cions being cut true and even, and well jointed to the stock, many of them will grow ; and this is a very good method of encreasing these trees. They may also be multiplied at pleasure by inoculation. This operation is best performed about ten days after Midsummer, in cloudy weather ; and for want of this, evening should be the time : and if much work is to be done, morning too may be added ; nay, it may be practised all day in the hottest seasons, with tolerable success ; but this is never so eligible, unless when the multiplicity of work obliges us to lose no time. The young wood of the preceding summer's shoot is proper for the purpose ; and the operation is to be performed in the usual way. In the autumn the bands should be loosed, and in the spring the stocks dressed up, and headed two or three inches above the bud ; the buds will be as early in shooting out as any of the shoots of the growing trees, and will soon become good plants for any place.

2. The **DOHOON HOLLY** is an American plant, particularly of Carolina, where it grows to be nearly as large a tree as our Holly does with us. It naturally rises with an upright stem, which is covered with a brown bark, and this affords plenty of younger branches, whose bark is green and very smooth. The leaves are pretty large, and of an oval lanceolated figure ; they are of a
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thickish composition, of a fine green, and grow alternately on the branches. Their edges are serrated, though altogether different from the Common Sawed Holly, their serratures towards the upper end of the leaf being small and sharp. The leaf, on the whole, is of a fine composition, and grows on short footstalks on the branches. The flowers are small and white, and a little resemble those of the Common Holly. They are produced from the sides of the branches, in short thick clusters; and are in their native climate succeeded by red berries, equalling those of our Common sort in beauty.

The Dohoon Holly may be PROPAGATED by seeds, which we receive from the countries where it grows naturally; for the berries will not ripen, and indeed are very seldom produced, in England. The best way is to sow them in pots filled with light sandy earth, as soon as they arrive, and then plunge them up to the rims in the natural mould, where they may remain until the spring following; for they rarely ever come up the first summer. The spring after that the plants will appear; and if they have then the assistance of a hotbed, it will greatly help them forward. They must be used to the open air soon. The pots must be taken up and plunged in a shady place, and in October they should be removed into the greenhouse for the winter. In the spring the plants in the pots may be thinned by drawing out the strongest; and those thus drawn should be planted each in a separate pot, and must be set forward with a hotbed as before. The others, also, may be taken out at two or three years growth, planted in pots, and assisted in the same manner. Every October they should be removed into the greenhouse, set out in the spring, and treated as greenhouse-plants, until they are at least five or six years old; for before then they will be hardly woody enough to venture the planting them out to stand. The latter end of March, when the danger of bad weather is chiefly over, is the best time for the purpose; and if they have a dry soil and a warm situation, they will bear the cold of our common winters; though if a very severe winter should happen before they are got very strong and woody, it is more than probable that all of them will be destroyed.

I T E A.

LINNEAN Class and Order, *Pentandria Monogynia* : Each flower contains five males and one female : There is only one SPECIES :

ITEA *Virginica* : The ITEA ; a *deciduous shrub* ; native of Virginia.

The ITEA is a plant of about five or six feet in height. The branches are numerous, and are produced irregularly all round. The leaves with which they are ornamented are of a fine green colour, gentle serratures possess their edges, their figure is that of a spear, and they grow alternately on the twigs. But the flowers constitute the greatest beauty of these shrubs ; for they are produced in July, at the ends of the young shoots, in large erect spikes : Their colour is white ; and as most of the branches will be terminated by them, the tree itself appears at a distance like one large bunch of white flowers : So delightful is the variety which Nature furnishes for our contemplation and pleasure.

The PROPAGATION of this beautiful shrub is not very easy ; though it may be propagated by seeds and layers. 1. We receive the seeds from abroad. They should be sown in pots or boxes of fine loamy earth, mixed with drift or sea sand ; and these should be plunged up to the brim in the moistest part of the garden, where they may remain till the spring after ; for the seeds seldom come up the first year. In March, therefore, the pots should be taken up, and plunged into an hotbed, which will promote the growth of the seeds, and make them become stronger by the autumn. After the heat of the bed is over, they may be put in the same moist places again. The plants ought to be constantly weeded and watered ; and in the autumn should be removed into the greenhouse, or placed under an hot-bed-frame, to be protected in severe weather. This care should be continued through the next winter also. In the spring, a damp day being made choice of, and a moist part of the nursery being well prepared, they should be taken out of the pots or boxes, and planted at about a foot asunder, which will be
distance

distance enough for their standing two or three years, when they will be of a sufficient size to be finally planted out. 2. These trees are also propagated by layers; for which purpose, some of them should be planted for stools in a moist rich soil. The young shoots of the preceding summer should be laid in the ground in the autumn; and in order to make them strike root, a little wire should be twisted pretty close round the bud, where the root is desired to be: This wire impeding the motion of the sap the succeeding summer, will occasion them to swell in those parts, and strike root. There are other methods by which the operation may be performed; but this has been found the most expeditious and surest.

J U G L A N S.

LINNEAN Class and Order, *Monoecia Polyandria*: Male flowers containing many stamina, and female flowers containing two pistils, upon the same plant; the males being collected in oblong catkins, the females sitting in clusters close to the branches: There are five SPECIES, four of which are sufficiently hardy for this climate.

1. *JUGLANS Regia*: The COMMON WALNUT; a *deciduous tree*; whose native country is uncertain.

2. *JUGLANS Nigra*: The BLACK VIRGINIA WALNUT; a *deciduous tree*; native of Virginia, Carolina, and Maryland.

3. *JUGLANS Alba*: the HICKERY-NUT, or WHITE VIRGINIA WALNUT; a *low deciduous tree*; native of Virginia.

4. *JUGLANS Cinerea*: The PENNSYLVANIA WALNUT; a *low deciduous tree*; native of Pennsylvania and other parts of North-America.

1. The WALNUT-TREE. This as a fruit-tree is universally known. We sometimes see it rise to a considerable height, and grow to great size; in general, however, it does not rise higher than fortyfeet; spreading out into a globular inelegant head; this added to the late season at which it puts forth its leaves, and the stiff uncouth appearance it takes after their fall, renders it of low value as an *Ornamental*; unless indeed its
general

general appearance be heightened, by the imagination, with the idea of *Utility*. In this point of view, whether we consider its fruit, or the timber it produces, the Walnut ranks high, and is no doubt an object of notice to the planter. We are far, however, from being such enthusiasts to the Walnut as EVELYN was: indeed its uses as a timber are greatly lessened since his day: Mahogany has superseded it in the more elegant kinds of furniture; and the Beech, being raised at less expence, and, from the cleanness of its texture, being worked with less trouble, has been found more eligible for the commoner sorts; chairs more especially. Nevertheless, the Walnut is still a useful wood: it takes a fine polish, and is in good esteem among the cabinet-makers, turners, and gunsmiths. Were the importation of Mahogany to be obstructed, the Walnut it is probable would become a very valuable wood.

The method of PROPAGATING the Walnut is from seeds: EVELYN recommends the Black Virginia sort for timber; and says the nuts should be kept in the husks, or shucks, until March; when they should be planted in the husks; for, he says, "the extreme bitterness thereof is most exitial and deadly to the worm; or it were good to strew some furzes, broken or chopt small, under the ground among them, to preserve them from mice and rats when their shells begin to wax tender." He recommends their being planted in the place where they are to abide; the Walnut being very impatient of transplanting. If, however, it be necessary to remove the plants, he cautions us not to touch the head with the knife; nor even the tap-root, except when very young. Speaking of experienced husbandmen, he says, "what they hint of putting a tile-shard under the nut, when first set, to divaricate, and spread the roots (which are otherwise apt to penetrate very deep) I like well enough." And from the same source he was informed, "that if they be transplanted as big as one's middle, it may be done safer than when young:" he adds, however, "I do only report it." MILLAR also recommends the Black Virginia sort for timber, which he says "is much more inclinable to grow upright than the Common sort; and the wood being generally of a more beautiful grain, renders it preferable to that, and better worth cultivating." "I have seen some of this wood," continues he, "which hath been beautifully veined with black and white,

which when polished has appeared at a distance like veined marble." The nuts, he says, should be kept in the husks till February, the proper time of sowing. If the trees be intended for timber, the nuts should be planted where they are to remain; but if for fruit, in a seed-bed; because transplantation checks their upward growth, and renders them more fruitful. For timber, "they should be planted in lines at a distance you intend them to remain; but in the rows they may be placed pretty close, for fear the nuts should miscarry; and the young trees where they are too thick may be removed, after they have grown two or three years, leaving the remainder at the distance they are to stand." He also cautions against too free a use of the pruning-knife, either to the roots or the branches; but when there is a necessity, he says, of cutting any of their branches, "it should be done early in September."—He adds, "The best season for transplanting these trees is as soon as the leaves begin to decay, at which time, if they are carefully taken up, and their branches preserved entire, there will be little danger of their succeeding, although they are eight or ten years old; though these trees will not grow so large or continue so long as those which are removed young." HANBURY likewise follows EVELYN in recommending the Black Virginia Walnut in preference to the Common sort for timber. His further directions concerning the choice of the seed and the method of propagation are as follow: "If the fruit of these trees are greatly coveted, the utmost care should be taken to gather the nuts from those trees which produce the best sorts; and although the varieties of Walnuts are only seminal variations, yet there is the greater chance of having a succession of good nuts, if they are gathered from trees that produce good fruit. This maxim holds good in animals: The finest breed would degenerate, if attention was not paid to the sorts for breeding; and the like care must be extended throughout the whole system of planting, whether for fruit or timber. If for timber, we should be solicitous to gather the seeds from the healthiest, the most luxuriant and thriving young trees: If for fruit, from those which produce the richest and best kinds. Having marked the trees that produce the finest nuts, either for thinness of shell or goodness of taste, when they have begun to fall they will be ripe enough for gathering. But as collecting them

them by the hand would be tedious, they may be beat down by long poles prepared for that purpose. Having procured the quantity wanted, let them be preserved, with their husks on, in sand till the beginning of February, which is the time for planting them. This is to be done in the following manner : Let drills be made across the seminary, at one foot asunder, and about two inches and a half deep, and let the nuts be put in these at the distance of about one foot. In the spring the young plants will come up ; and here they should continue for two years, being constantly kept clear of weeds ; when they will be of a proper size to plant out in the nursery. The ground should be prepared, as has been always directed, by double digging ; and the trees being taken out of the seminary, and having their tap-roots shortened, should be planted therein, in rows two feet and a half asunder, and the plants at a foot and a half distance. Here they may remain, with the same culture as has been all along directed for the management of timber trees, till they are of a proper size for planting out for good. If they are designed for standards to be planted in fields, &c. before they are taken out of the nursery they should be above the reach of cattle, which may otherwise wantonly break their leading shoots, though they do not care to eat them on account of their extraordinary bitterness. They ought likewise to be removed with the greatest caution, and the knife should be very sparingly applied to the roots. They must also be planted as soon as possible after taking up ; and this work should be always done soon after the fall of the leaf."

EVELYN tells us, that the Walnut-Tree may be propagated " by a branch slipped off with some of the old wood, and set in February ;" and in another place, " it is certain they will receive their own cyons being grafted, and that it does improve their fruit."

It is agreed on all hands, that the Walnut requires a dry, sound, good soil, and will make but little progress, as a timber tree, in a cold barren situation.

2. The BLACK VIRGINIA WALNUT. This is the sort recommended for timber, and will grow to a large tree. The young shoots are smooth, and of a greenish-brown. The leaves are produced irregularly : They are large and finely pinnated, being composed of about eight, ten, twelve, and sometimes

fourteen pair of spear-shaped, sharp-pointed folioles, which are terminated by an odd one, sawed at the edges, and the bottom pair are always the least. The flowers give pleasure only to the curious botanist. They blow early in the spring; and the females are succeeded by nuts of different sizes and shapes. The nuts of the Common sort have a very thick shell, inclosing a sweet kernel. They are furrowed, and of a rounder figure than those of the Common Walnut.

There are many *varieties* of this species, and nuts of different sizes, like those of the Common Walnut, will always be the effect of seed: Some will be small and round; others oblong, large, and deeply furrowed. You must expect also to find a variety in the leaves; some will have no scent, others will be finely perfumed. Hence the names, *Common Virginian Walnut*, *Aromatic Walnut*, *Deeply-furrowed-fruited Walnut*, &c. have been used to express the different varieties of this species.

3. THE WHITE VIRGINIAN WALNUT, called the Hickery-Nut, is a tree of lower stature, seldom rising more than thirty or thirty-five feet high; though the sort called the Shag-Bark is the strongest grower. The young shoots of all are smooth. The leaves are also pinnated, though some of them are small, the number of folioles being from two or three pair to six or seven, besides the odd one with which they are terminated. The folioles are of a pleasant green colour, narrowest at their base, and serrated at their edges. The flowers are no ornament; and the nuts are small, hard, and of a white colour.

The *varieties* of this species go by the various names of *Common Hickery-Nut*, *Small-fruited Hickery-Nut*, *Shag-Bark Hickery-Nut*, &c.

4. PENNSYLVANIA WALNUT. This species grows to about the height of the former. The leaves are very long, being composed of about eleven pair of folioles, besides the odd one with which they are terminated. The flowers are yellowish, come out at the usual time with the others, and are succeeded for the most part by small, roundish, hard-shelled fruit; though the nuts will be of different sizes in the different varieties.

The method of PROPAGATING these trees is from the nuts, which we receive from America, where they grow naturally. These must be sown as soon as they arrive, in the manner directed,

rected for raising the Common Walnut. Their after-management must also be the same.

J U N I P E R U S.

LINNEAN Class and Order, *Diœcia Monadelphia* : — Male flowers containing three stamina, and female flowers containing three pistils, situated on distinct plants. There are ten SPECIES ; nine of them as follow :

1. JUNIPERUS *Communis* : The COMMON JUNIPER ; an evergreen shrub ; native of England, and of many of the northern parts of Europe.
 2. JUNIPERUS *Oxycedrus* : The SPANISH JUNIPER ; an evergreen shrub or tree ; native of Spain and South of France.
 3. JUNIPERUS *Virginiana* : The VIRGINIA CEDAR, or the RED CEDAR ; an evergreen tree ; native of Virginia and Carolina.
 4. JUNIPERUS *Bermudiana* : The BERMUDIAN CEDAR ; an evergreen tree ; native of Bermudas and America.
 5. JUNIPERUS *Barbadensis* : The JAMAICA CEDAR ; a tall evergreen tree ; native of Jamaica and other West-India Islands.
 6. JUNIPERUS *Thuifera* : The SPANISH CEDAR ; an evergreen tree or shrub ; native of Spain.
 7. JUNIPERUS *Lycia* : The LYCIAN CEDAR ; an evergreen tree or shrub ; native of Spain, Italy and France.
 8. JUNIPERUS *Phœnicea* : The PHENICIAN CEDAR ; an evergreen shrub or tree ; native of Portugal, South of France and the East.
 9. JUNIPERUS *Sabina* : The SAVIN ; a very low evergreen shrub ; native of Italy, Siberia, Mounts Olympus and Ararat, and of Lusitania.
1. The COMMON JUNIPER. This species is divided into two varieties :

The English Juniper.

The Swedish Juniper.

The *English Juniper* grows common upon the chalky hills about Banstead and Leatherhead in Surry, where it appears in a low weak state, as if cropped and kept down by the browsing of sheep, seldom rising higher than two or three feet ; but when planted in a good soil, it will grow to the height of fifteen or sixteen feet, and will produce numerous branches from the bottom to the top, forming a large well-looking, bushy plant. These branches are tough, and covered with a smooth bark of a reddish colour, with a gentle tinge of purple. The leaves are narrow, and sharp-pointed : They grow by threes on the branches ; their upper surface has a greyish streak down the middle, but their under is of a fine green colour, and they garnish the shrub in great plenty. This tree flowers in April and May. The flowers are small, of a yellowish colour, and make no figure. They are succeeded by the berries, which are of a kind of a blueish purple when ripe, which will not be before the autumn twelvemonth following.

The *Swedish Juniper* has a natural tendency to grow to a greater height, and consequently has more the appearance of a tree than the former sort ; sixteen or eighteen feet, however, is the highest it commonly grows to ; and the plants raised from its seeds have, for the most part, a tendency to grow higher, and become more woody and ramose. The leaves, flowers, and fruit, grow in the same manner, and are of the same nature, which shews it to be a variety only. Old Botanists mention it as a distinct species : CASPAR BAUHINE asserts this, and calls one the Shrubby Juniper, and the other Tree Juniper ; and he also mentions another sort, which he calls the Lesser Mountain Juniper, with a broader leaf and a larger fruit. This is still a variety of the Common Juniper. The leaves, flowers, and fruit, however, are much the same ; though there may be some difference in the size of their growth. From what has been said, the Gardener will know, when he meets with them by those different names, where to plant them in suitable situations. It is observable of both these sorts, that in the beginning or middle of May, when they will be in full blow, the farina of the male flowers is discharged in such plenty, that upon striking the shrub with a stick, it will rise up, in a still air, like a column
of

of white smoke, and like that will be wafted with the gentlest wind, until it is lost or out of sight.

2. SPANISH JUNIPER will grow to be rather an higher tree than the Swedish, in some soils. It will be feathered from the bottom to the top, if left untouched from the first planting, or if not crowded with other trees. The leaves are awl-shaped, and finely spread open. They are very short, sharp-pointed, and give the tree a fine look. The flowers are succeeded by large reddish berries, which are very beautiful when ripe.

3. VIRGINIA CEDAR. This tree is held out by EVELYN and HANBURY as being proper to be planted as a forest or timber-tree. It grows to near forty feet high, the branches forming a beautiful cone, and, if left unpruned, the tree will be feathered to the very base; consequently it is highly *ornamental*. And HANBURY says, it "is valuable for many excellent and rare *uses*: It will, he says, continue sound and uncorrupt for many ages, being possessed of a bitter resin, which prevents the worms from attacking it. The wood may be converted into utensils of most sorts, as well as applied to great part of the uses to which the cypress is adapted. It is remarkable, however, for being of a very brittle nature, and is therefore not proper to be introduced into buildings where any great weight is to be lodged. Nevertheless, in Virginia and Carolina, where they abound, these trees are used in structures of all kinds, with this precaution; and the inhabitants prefer the timber to most other wood for wainscoting their rooms, and building of vessels."

4. BERMUDIAN CEDAR. In the island from which this tree takes its name, it grows to a timber size; but in this country it is a very tender plant, and requires not only a dry warm soil, but open mild winters to make it continue thro' them; so that when a person is desirous of having an extensive collection, then and then only is this sort to be sought after; for, when planted abroad, even in the warmest quarters, the plants require sheds to preserve them from the winter's frost. It is the wood of the Bermudian Cedar of which pencils are made; also drawers of cabinets; and formerly wainscoting was made of this wood. In the island of Bermudas (which is in a manner covered with this tree), as well as upon the Continent of America, ships are built of it: its scent is peculiarly aromatic; but though agree-

able to most people, it is offensive to some ; and this may be one reason why less of this wood has of late years been imported into this country than was formerly.

5. JAMAICA CEDAR. This, in Jamaica, is a very large timber-tree ; but in our climate it is still more delicate than the Cedar of Bermudas ; both of which ought to be considered as greenhouse rather than as shrubby plants.

6. SPANISH CEDAR grows plentifully in the country by whose name it is distinguished : it is a handsome, regular-growing tree, rising in a conical form, if the branches are untouched, to the height of thirty or more feet. The leaves are imbricated, and lie over each other four ways ; they are acute, and of a fine green colour : From these properties only, an idea of a fine tree may be had. The flowers are insignificant to a common observer ; but they are succeeded by berries which make a good show when ripe ; for they are very large, and of a fine black colour, and adorn the young branches in great plenty.

7. LYCIAN CEDAR, also common in Spain, will rise to the height of about twenty-five feet ; the branches have naturally an upright position, and their bark is of a reddish hue. The leaves are every where imbricated, and each is obtuse and of an oval figure. They resemble those of the Cypress, and are very beautiful. The flowers are succeeded by large oval berries, of a brown colour, and will be produced in plenty from the sides of the younger branches all over the tree.

8. PHENICIAN CEDAR seldom grows higher than twenty feet, and is a beautiful upright sort, forming a kind of pyramid, if untouched, from the bottom. It has both ternate and imbricated leaves ; the under ones grow by threes, and spread open ; and the upper ones are obtuse, and lie over each other like the Cypress. The flowers are produced from the ends of the branches ; and the fruit that succeeds them is rather small, and of a yellow colour. It is commonly called the Phenician Cedar, though it is found growing naturally in most of the southern parts of Europe.

9. SAVIN. Of this species there are three sorts :

Spreading Savin,

Upright Savin, and

Striped Savin,



Spreading

Spreading Savin is a low-spreading shrub ; the branches have a natural tendency to grow horizontally, or nearly so ; so that it must be ranked amongst the lowest growing shrubs ; inasmuch that unless it is planted against a wall, or supported in an upright position, we seldom have it higher than two feet. When it is to be planted and left to Nature, room must be first allowed for its spreading ; for it will occupy a circle of more than two or three yards diameter, and will choke any other less powerful shrub that is placed too near it. The bark on the older shoots is of a light-brown colour ; but the younger, which are covered with leaves running into each other, are of as fine a green as any shrub whatever. These leaves are erect, and acute-pointed. They are placed opposite, and grow a little like those of the French Tamarisk. This shrub seldom produces flowers or berries ; but when any berries do appear, they are small and of a blueish colour. It deserves a place amongst low-growing evergreens, on account of the fine strong green of its leaves both in winter and summer ; but it is valuable for nothing else ; for it produces neither flowers nor fruit ornamental, and is possessed of a very strong smell ; inasmuch that, being stirred by whatever runs amongst it, the whole air is filled with a foetid scent, which is emitted from its branches and leaves, and which to most people is disagreeable. It is in great request with horse-doctors and cow-leeches, by which they much benefit those creatures in many disorders. The juice of it, mixed with milk and honey, is said to be good to expel worms from children ; as well as, without that mixture, to destroy those in horses, for which purpose it is strongly recommended.

Upright Savin is a delightful tree ; it will grow to be twelve or fourteen feet high. The branches are numerous and slender, and give the tree a genteel air. The leaves are nearly of the same nature with the other, though they are of a darker green. The flowers, though produced in plenty, make no show ; but they are succeeded by berries in such plenty as to cause a good effect. The upright tendency of growth of this tree, together with the very dark green of the leaves, which causes a good contrast with others that are lighter, together with its not being possessed of that strong disagreeable scent of the other sort, makes it valuable for evergreen plantations.

Variegated

Variegated Savin is a variety of the former ; it has not the tendency to spread like the Common, neither does it grow quite so upright as the Berry-bearing Savin. It is a fine plant, and at present rather scarce. The ends of several of the young shoots are of a fine cream-colour ; nay, all the smaller branches appear often of that colour, and at a distance will have the appearance of flowers growing on the tree. In short, to those who are fond of variegated plants, this shrub has both beauty and scarcity to recommend itself.

The method of PROPAGATING this genus of plants varies in some degree with the respective species.

The Common Juniper,
The Spanish Juniper,
The Virginia Cedar,
The Spanish Cedar,
The Lycian Cedar, and
The Phenician Cedar,

are raised from seeds procured from the respective places of their growth, and sown the latter end of February or the beginning of March, in beds of light sandy earth, about half an inch deep. In about twelve months after sowing the plants will appear. Having stood two years in the seed-bed, they may be removed to the nursery, planting them from one to two feet distance in the rows, with two-feet intervals ; and here they may remain until wanted for use. They may be transplanted either in autumn or in spring, care being had to perform the removal in moist weather, preserving as much mould as possible amongst the fibres. HANBURY recommends that the seeds of the COMMON JUNIPER be sown as soon as possible after they are ripe ; for if this precaution, he says, is observed, they will come up the spring following ; whereas if they are neglected till the spring, they will not appear till the spring after that ; and sometimes a great part of them will remain till the second and even third season before they come up. The COMMON JUNIPER may also be increased by layers.

The Bermudian Cedar, and
The Jamaica Cedar,

require

require that the seeds be sown in pots ; that the young seedlings be planted out into separate pots ; and that these be always housed in the winter.

- The COMMON SAVIN is to be increased by slips, which if planted almost at any time, or any how, will grow. The Upright Savin also is to be increased by slips planted in moist weather, in August, and kept shaded and watered in dry weather afterwards. This is the best way of treating cuttings of the Upright Savin, though they will often grow if planted at any time, either in winter or summer. The Striped Savin also is to be increased this way ; though care must be always used to take off those branches that are most beautifully variegated, and such also as are entirely of a cream-colour ; for this will be the most probable method of continuing it in its variegated beauties. This plant is also to be raised by berries ; and if these have the same treatment as the other sorts, it will be very proper ; and by these the most upright and best plants are raised.

K A L M I A.

LINNEAN Class and Order, *Decandria Monogynia* : Each flower contains ten males and one female : There are two SPECIES :

1. *KALMIA Latifolia* : The BROAD-LEAVED KALMIA ; an evergreen shrub ; native of Maryland, Virginia, and Pennsylvania.

2. *KALMIA Angustifolia* : The NARROW-LEAVED KALMIA ; an evergreen shrub ; native of Pennsylvania and Carolina.

1. The BROAD-LEAVED KALMIA seldom rises to more than four or five feet high ; and the branches, which by no means are regularly produced, are hard, and of a greyish colour. The leaves are of an oval, spear-shaped figure, and of a fine shining green colour. Their consistence is rather thick in proportion to their footstalks, which are but slender, and grow irregularly on the branches. The flowers are produced at the ends of the

the branches, in roundish bunches. They are first of a fine deep red, but die away to a paler colour. Each is composed of a single petal, which is tubular at the bottom, spreading open at the top, and has ten permanent corniculæ surrounding them on their outside. They generally flower with us in July; and are succeeded by roundish capsules, full of seeds, which seldom ripen in England. In some places this is a fine evergreen; and in others, again, it often loses its leaves, and that sometimes before the winter is far advanced.

2. The NARROW-LEAVED KALMIA is rather of lower growth than the other, and the branches are more weak and tough. The leaves are very beautiful, being of a fine shining green; they are of a lanceolate figure, and in all respects are smaller than those of the former sort, and stand upon very short footstalks. They are produced in no certain regular manner, being sometimes by pairs, at other times in bunches, growing opposite at the joints. The flowers are produced from the sides of the branches in roundish bunches; they are of a fine red colour, and each is composed of one petal, that has the property of spreading open like the former. They flower in July, and are very beautiful; but are not succeeded by ripe seeds with us.

Both these sorts are to be PROPAGATED three ways; by seeds, layers, and suckers. 1. By seeds. These we receive from abroad; and for their reception we should prepare a compost, consisting of half fresh soil from a rich pasture, taken from thence a year before, and half drift or sea sand: these being well mixed, will be proper for the reception of the seeds, which should be sown in pots or boxes, half an inch deep. As soon as they are sown, they should be removed into a shady place, to remain until the spring following, and all this time nothing but weeding will be wanted; for they seldom if ever come up the first summer. About the beginning of March it will be proper to plunge these pots into an hotbed, and this will fetch the plants up, and make them grow strong. They must be hardened by degrees to the air, and then set in a shady place. Watering must be now and then given them, if the season proves dry; and at the approach of winter they may be removed into the greenhouse, or set under an hotbed-frame, but should always have the free air in open weather. In these pots or boxes they should remain until they

they are two-years-old seedlings; when they should be shaken out, and planted in a separate pot. They should then be forced, by plunging the pots into an hotbed. Afterwards, they may be removed into the shade; and if they are kept growing in the pots, and removed under shelter in hard weather for a year or two, they may be afterwards planted out finally. 2. These shrubs are propagated by layering. It should be done in the autumn; and the young wood of the preceding summer's shoot is proper for the purpose. If the soil is free and light, they will strike root pretty readily; though we must sometimes wait two years before we find any: But by this way the strongest plants are obtained in the least time. 3. They are also encreased by suckers; for if the soil be light and fine, and is what agrees with them, after standing a few years, they naturally send out suckers in plenty. These should be taken off in the spring: and those with bad roots should be set in pots, and plunged into an hotbed, to make them grow.

L A V A T E R A.

LINNEAN Class and Order, *Monadelphia Polyandria*: Each flower contains many males and many females; the males being joined together at the base: There are nine SPECIES; four of which are cultivated in our open grounds:

1. *LAVATERA Arborea*: The COMMON LAVATERA, or MALLOW-TREE; a *deciduous shrub*; native of Italy.

2. *LAVATERA Triloba*: The THREE-LOBED LAVATERA, or MALLOW-TREE; a *deciduous shrub*; native of Spain.

3. *LAVATERA Olbia*: The FIVE-LOBED LAVATERA, or MALLOW-TREE; a *deciduous shrub*; native of the South of France.

4. *LAVATERA Micans*: or the GLITTERING LAVATERA; or the SHINING-LEAVED MALLOW-TREE; a *deciduous shrub*; native of Spain and Portugal.

1. The COMMON LAVATERA is a well-known plant: It usually grows to eight or ten feet high, and in a rich soil will
grow

grow to twelve, or more. The stem is thick and strong, and divides near the top into several branches, which are closely ornamented with large downy leaves; they are soft to the touch, plaited, and their edges are cut into many angles. The flowers are produced in clusters, from the wings of the leaves, in June, and there will be a succession of them until late in the autumn. Each flower has its separate footstalk: Their colour is purple; their shape like that of the Common Mallow; and they would make a great show, were they not much obscured by the largeness of the leaves. The whole tree has a noble look; and its continuing for about three months in flower makes it very valuable. But tho' its short-lived continuance is much to be regretted, yet Nature seems to have made some amends for this, by furnishing it with good seeds in very great plenty; for by these thousands of plants may be soon raised; nay, they will sometimes shed themselves, and come up without any art. But when they are to be regularly sown, let it be done in April, in the places where they are designed to remain, and they will flower the summer after. Tho' this plant is called a biennial, in some warm dry situations the stalks become hard and woody, and the plants will continue to produce flowers and seeds for many years.

There are several *varieties* of this species; the leaves of some being round and indented, others acutely cut, others waved: These among old gardeners go by the names of the *Round-leaved*, *Waved-leaved Mallow-Tree*, &c.

2. The THREE-LOBED LAVATERA. This species is very ornamental in the front, or among the low shrubs in the wilderness-quarters, or when stationed in large borders in pleasure-grounds, as it is naturally of low growth, seldom rising to above four or five feet high. It has rather a large spreading root, in proportion to the size of the shrub. The branches are numerous, and of a palish green colour; and the leaves are of different figures, though chiefly trilobate, or composed of three lobes, that are indented on their edges. They vary much in their size, some being larger, some smaller, and some more divided than others. Their colour, when the plant is in perfect health, is a very pleasant green; but they will often shew themselves a little variegated; at which time you may be assured the shrub is in a sickly state. This often does not continue long, and the plant will
assume

assume its former verdure, and as frequently and very speedily relapse into its weak state ; which shews that, though hardy with respect to cold, it is rather of a sickly nature in this country. The flowers are produced singly, on short footstalks : They grow from the joints, at the bosoms of the leaves ; three or four of them will appear at each joint ; and being large, they make a fine show in August, the time of flowering.

There are *varieties* of this species, differing in the shape of the leaves and size of the flowers, which still have names among old botanists.

3. The FIVE-LOBED LAVATERA is a distinct species from the preceding, though it differs little from it, except in the nature of the leaves, each of which is composed of five lobes, that are hastated, or pointed like a spear, and in the flowers of this shrub being smaller. They will be in full blow in August, and there will often be a succession of them till the early frosts advance. The leaves of this species vary : Some are shaped like Briony ; others are nearly round ; and the lobes of others are very acute. Hence the names Briony-leaved, Round-leaved, Acute-leaved Mallow-Tree, &c. have been used to express them.

4. GLITTERING LAVATERA grows to about the height of the former. The leaves are large, septangular, plaited, downy, white, and glisten towards the sun. The flowers are produced in bunches, from the ends of the branches : They are shaped like those of the Common Mallow, come out in July, and continue in succession until the end of autumn.

The *varieties* of this species go by the names of *Waved-leaved*, the *Common Spanish*, the *Sulphur-leaved Mallow-Tree*, &c. These three sorts are easily PROPAGATED by cuttings, which should be planted, early in the spring, in a shady border of light rich earth. Many of them will grow ; and the plants may stand two or three years before they are removed to the places where they are designed to remain.

The best method of PROPAGATING all the sorts is by seeds ; and by this way fresh varieties may be obtained. The seeds should be procured from Spain, where the plants naturally grow ; for none, except the first sort, ripen well here. Having got a sufficient quantity, sow them in a border of light, fine, rich earth, about the middle of March. They will easily come up,
and

and nothing but weeding and watering in dry weather will be required until the spring after : when they should be planted in nursery-lines, there to remain until they are set out to stand. The leaves of all the sorts continue until the frosts come on ; so that if an open winter happens, they will continue in verdure the greatest part of the season.

The *Lavatera* tribe affect a warm sandy situation and soil, in which they will sometimes continue to exhibit their beauties for many years ; but in general they are short-lived, continuing only two or three years : this renders them peculiarly eligible to be scattered plentifully in a newly made shrubbery ; they will add warmth to young plants, and will die away themselves before the spaces they occupy will be required by the surrounding shrubs.

L A U R U S.

LINNEAN Class and Order, *Enneandria Monogynia* : Each flower contains nine males and one female : There are eleven SPECIES ; four of which are adapted to our purpose :

1. *LAURUS Nobilis* : The EVERGREEN BAY, or the COMMON BAY ; an evergreen shrub or tree ; native of Italy, Greece, and Asia.

2. *LAURUS Æstivalis* : The DECIDUOUS BAY ; a tall deciduous shrub ; native of swampy places, and the sides of brooks and rivers in Virginia.

3. *LAURUS Benzoin* : The BENZOIN TREE, or BENJAMIN TREE ; a deciduous tree or shrub ; native of Virginia and Pennsylvania.

4. *LAURUS Sassafras* : The SASSAFRAS TREE ; a deciduous tree or shrub ; native of Virginia, Carolina and Florida.

1. The EVERGREEN BAY. EVELYN says, he has seen Bay Trees near thirty feet high and almost two feet in diameter ; and enumerates the Bay amongst useful trees. HANBURY catches at this idea, and tells us in general terms, that " it will grow to thirty

thirty feet in height, with a trunk of two feet in diameter," and, accordingly, he arranges it amongst his Forest Trees: he acknowledges however at the same time that the wood is of little value. The Bay is nevertheless a fine aromatic and a beautiful evergreen: It is said to be the true *Laurus* or Laurel of the ancients, with which they adorned the brows of their successful generals. The leaves stand close, are about three inches long and two broad; are hard, rigid, and of a deep green colour. The Bay, too, like the Holly, Box, and Laurel, will bear the shade and drip of taller trees, and it is upon the whole a very desirable, as being a very *ornamental*, evergreen. There are several *varieties*: as the Broad-leaved Bay, the Narrow-leaved Bay, and the Wave-leaved Bay.

This tree is PROPAGATED by layers, or by the berries. In order to raise a quantity of these trees by layers, some stools should be planted for the purpose; and after these are shot about a yard high, the branches must be brought down to the ground in the winter, all the preceding summer's shoots laid on it, and pegged down (being first slit in the joint), and the leaves taken off, which would otherwise be under ground. In one year's time these layers will have taken root; and in the spring they should be taken up, and planted in the nursery a foot asunder, in rows two feet distance. After they are planted out, if the weather should prove dry, they must be constantly watered; for without such care, it is difficult to make this tree grow. After they have taken well to the ground, they will require no farther trouble than keeping them clean from weeds, and digging between the rows each winter, till they are finally planted out. 2. In order to raise this tree from the berries, they ought to hang on the trees till about January before they are gathered. A well-sheltered spot of ground for the seminary must be made choice of; and having the mould smooth and fine, they should be sown soon after they are gathered in beds, or drills, rather more than half an inch deep. Towards the close of the spring the plants will come up, and during summer must be duly attended, by watering and weeding. In the winter following, their sheltered situation must not be trusted to, to defend them from the frost: Furze-bushes, or some such things, ought to be stuck in rows, between the beds or drills, to guard them from the black frosts. Indeed, without this precaution, if the winter should prove very

frosty, few of the young seedlings will be alive in spring. During the following summer, weeding and watering must be observed, and the winter after that they should be defended with covering as before; for they will be still in danger of being destroyed by severe frosts. In the ensuing spring, the strongest may be taken out of the seed-beds, and planted in the nursery way; though if they have not by that time made good shoots, it will be advisable to let them remain in their beds till the third spring; for a small plant of this kind is with more difficulty made to grow than one which is larger. When they are planted in the nursery, the distance which should be allowed them is the same as the layers, a foot asunder and two feet distance in the rows; and this will not be found too close; for notwithstanding the greatest care is exerted in planting them in the nursery, even making choice of rainy and cloudy weather, which must always be observed in setting them out, many of them will be lost by being transplanted. After they are thus planted out in the nursery, whether layers or seedlings, they must be still watered in dry weather, kept free from weeds, and the rows dug between every winter. You will even find, that those plants which suffer least by being transplanted will have met with a check, which they will not recover in two or three years; and till they have acquired new strength they should not be taken from the nursery; but when they appear to be good stiff plants, having the year before made a vigorous shoot, they will be then proper plants for planting out where they are to remain. Holes should be got ready for their reception; and as soon as the first autumnal rains fall, the work should be set about, especially if the land be gravelly or dry; but if it be moist, the spring will do as well. Being now planted at one yard distance, they will make a poor progress for two or three years more; but after this, when they have overcome all these difficulties, they will grow very fast, and arrive to be good trees in a few years.

Although this tree flourishes best in old gardens, where the soil has been made rich and deep, and loves the shade, HANBURY tells us, "it thrives nevertheless exceedingly well in our hottest gravels and sands; and, after it has surmounted the hardships of transplanting, will grow in such situations extremely fast, and arrive to a larger bulk."

2. The

2. The DECIDUOUS BAY, in a moist rich soil, in which it principally delights, will grow to be about sixteen feet high; but in some soils, that are possessed of the opposite qualities, it will hardly arrive at half that height. The branches are not very numerous, but they are smooth, and of a purplish colour, look well in winter, and in summer exhibit their leaves of an oval spear-shaped figure: They are about two or three inches in length, are proportionally broad, and placed opposite to each other on the branches. Their upper surface is smooth, and of a pleasant green colour, whilst their under is rough and veined. The flowers are small and white, make no figure, come out from the sides of the branches in May, and are succeeded by large red berries, which never ripen in England: So that, notwithstanding the leaves in summer are very pretty, and the colour of the bark makes a variety in winter, it is principally the scarcity of this plant which makes it valuable.

3. The BENZOIN TREE will grow to a much larger size than the other, and its branches are rather numerous: They are smooth, and of a fine light-green colour. The leaves are oval, acute, near four inches long, and two broad; their upper surface is smooth, and of a fine light green colour, but their under surface is venose, and of a whitish cast: When bruised, they emit a fine fragrance. The flowers make no figure: They are small and yellowish, come out from the sides of the branches in little clusters, and are succeeded by large blackish berries, which never ripen in England.

4. The SASSAFRAS TREE. The wood of the Sassafras is well known in the shops, where it is sold to be made into tea, being esteemed an excellent antiscorbutic and purger of the blood. A decoction of the leaves and bark is also said to possess the same virtues, and is drank by many persons for those purposes. This tree will grow to nearly the height of the others, though the branches are not so numerous. Its bark is smooth, and of a red colour, which beautifully distinguishes it in winter; whilst the fine shining green of its leaves constitutes its greatest beauty in summer. In these, indeed, there is a variety, and a very extraordinary one. Some are large, and of an oval figure; others are smaller, and of the same shape; whilst others, again, are so divided into three lobes, as to resemble the leaves of some sorts of the Fig-tree. Their edges are entire; their

under surface is of a whitish cast ; their footstalks are pretty long, placed alternately on the branches, and die to a red colour in the autumn. The flowers are small and yellowish : They are produced in clusters on longish pedicles, and are succeeded by blackish berries, which never ripen in England.

The PROPAGATION of these three sorts of trees may be performed two or three ways, 1. By the seeds. These we receive, from the places where the trees grow naturally, in the spring. They should be preserved in sand ; and, as soon as they arrive, should be sown in largish pots, an inch deep. The soil for their reception should be taken from a rich pasture at least a year before, with the sward. It should also be laid on an heap, and frequently turned, until the sward is grown rotten, and the whole appears well mixed and fine. If the pasture from whence it was taken near the surface is a sandy loam, this is the best compost for these seeds ; if not, a small addition of drift or sea sand should be added, and well mixed with the other mould. After filling the pots with this soil, the seeds should be sown an inch deep ; and then they should be plunged into common mould up to the rim. If the soil be naturally moist, it will keep them cooler, and be better ; and if the place be well-sheltered and shaded, it will be better still. Nothing more than weeding, which must be constantly observed during the summer, will be necessary ; and in this station they may remain until the March following ; about the middle of which month, having prepared a good hot-bed, the pots should be taken up and plunged therein. Soon after the seeds will come up ; and when the young plants have sufficiently received the benefit of this bed, they should be enured by degrees to the open air. Weeding and watering must be observed during the summer ; and, at the approach of the cold weather in the autumn, they should be removed under an hot-bed frame, or some cover, to be protected from the frosts during the winter. In the spring, when this danger is over, they should resume their first station ; namely, the pots should be plunged up to the rim, as when the seeds were first sown ; and if this place be well sheltered, they may remain there all winter ; if not, and severe frosts threaten, they should be taken up and placed under cover as before. After they have been thus managed three years from the seeds, they
should

should be taken out of the pots with care, and planted in the nursery-ground, at small distances; where they may remain until they are strong enough to be finally set out. By sowing the seeds in pots, and assisting them by an hotbed, a year at least is saved; for they hardly ever come up, when sown in a natural border, under two years from the seeds; nay, they have been known to remain three, and even some plants to come up the fourth year after sowing; which at once shews the preference of the former practice, and should caution all who have not such convenience, not to be too hasty in disturbing the beds when the seeds are sown in the natural ground; as, especially if they are not well preserved in mould or sand, these may be some years before they appear. Indeed, it is the long time we are in obtaining these plants, either by seeds, layers, &c. that makes them at present so very scarce amongst us. 2. These plants may also be encreased by layers; but very slowly; for they will be two, and sometimes three, or even four years, before they have struck out good roots; though the Benjamin Tree is propagated the fastest by this method. The young twigs should be laid in the ground in the autumn; and it will be found that twisting the wire round the bud, so as in some degree to stop the progress of the sap, and taking away with a knife a little of the bark, is a more effectual method of obtaining good roots soon than by the slit or twisting, especially when practised on the Sassafras Tree. 3. Plants of these sorts are likewise sometimes obtained by suckers, which they will at all times throw out, and which may be often taken off with pretty good roots; but when they are weak, and with bad roots, they should be planted in pots, and assisted by a moderate heat in a bed: With such management they will be good plants by the autumn, and in the spring may be planted out any where. 4. Cuttings of these trees, when planted in a good bark-bed, and duly watered, will also oftentimes grow. When this method is practised, and plants obtained, they must be enured by degrees to the open air, till they are hardy enough to be finally planted out.

L I G U S T R U M.

LINNEAN Class and Order, *Diandria Monogynia*: Each flower contains two males and one female: There is only one SPECIES:

LIGUSTRUM Vulgare: THE PRIVET; a well-known *deciduous or evergreen shrub*; common in the woods and hedges of many parts of England, and almost all Europe.

The PRIVET is divisible into two *varieties*:

The Deciduous or Common Privet, and

The Evergreen Privet.

The *Deciduous Privet* will grow to the height of about ten or twelve feet. The branches are very numerous, slender, and tough; covered with a smooth grey bark; and, when broken, emit a strong scent. The young twigs are generally produced opposite, and alternately of contrary directions on the older branches. The leaves also are placed opposite by pairs in the same manner. They are of an oblong figure, small, smooth, of a dark green colour, have a nauseous disagreeable taste, and continue on the trees very late. The flowers are produced in close spikes, at the ends of the branches, in May, June, and often in July: They are white, very beautiful, and succeeded by black berries, which in the autumn will constitute the greatest beauty of this plant; for they will be all over the tree, at the ends of the branches, in thick clusters. They are of a jet black; and will thus continue to ornament it in this singular manner during the greatest part of the winter.

The PROPAGATION of the Privet is easy; for it may be increased, 1. By the seeds; and by this way the strongest plants may be obtained. The seeds, soon after they are ripe, should be sown in any bed of common garden-mould made fine. They ought to be covered about an inch deep; and all the succeeding summer should be kept clean of weeds; for the plants never, at least not many of them, come up until the spring after. After they are come up, they will require no other care than weeding; and in the spring following may be planted in the nursery-ground, where they will require very little care besides keeping the weeds down, until they are taken up to plant. 2. These plants may

may be increased by layers; for the young shoots being laid in the ground in the autumn, will by that time twelvemonth have taken good root; the largest of which may be planted out to stand, and the smallest set in the nursery, to gain strength. 3. Cuttings, also, planted in October, will strike root freely; and if the soil is inclined to be moist, and is shaded, it will be the better for them, especially if the succeeding summer should prove a dry one. If these cuttings are thinly planted, they will require no other removing till they are finally set out. If a large quantity is desired, they may be placed close, within about two or three inches of each other, and then taken up and planted in the nursery the autumn following, to remain there until they are wanted for the above purpose.

The Privet, of all others, will thrive best in the smoke of great cities; so that whoever has a little garden in such places, and is desirous of having a few plants that look green and healthy, may be gratified in the Privet, because it will flourish and look well there. It will also grow very well under the shade and drip of trees.

The *Evergreen Privet*. This variety has a tendency to grow to be a taller and a stronger tree than the common deciduous sort. The leaves are rather larger, more pointed, of a thicker consistence, of a dark-green colour, and they continue on the same plant so long as to entitle it to the appellation of Evergreen; though it may often be observed to be almost destitute of leaves early in winter, especially those that were on the ends of the highest branches, which are often taken off by the first cutting winterly winds. In order to have this tree keep up the credit of an evergreen, it should have a well-sheltered situation; for although it be hardy enough to bear with impunity the severest cuts of the northern blasts, on the tops of hills, craggy rocks, &c. yet without some shelter the leaves are seldom preserved all winter, and with protection it is generally allowed to be an handsome evergreen. As it is a variety of the deciduous sort, the same flowers and fruit may be expected.

It is to be raised in the same manner, by layers or cuttings; and the seeds of this sort sometimes produce plants of the like sort, that retain their leaves.

L I Q U I D A M B E R.

LINNEAN Class and Order, *Monoecia Polyandria*: Male flowers containing many stamina, and female flowers containing two pistils, situated upon the same plant; the males being collected into long conical loose katkins, and the females forming a globe situated at the base of the male spike: There are only two SPECIES;

1. LIQUIDAMBER *Styraciflua*: The VIRGINIA LIQUIDAMBER, or the MAPLE-LEAVED LIQUIDAMBER; *a deciduous tree*; native of the rich moist parts of Virginia and Mexico.

2. LIQUIDAMBER *Peregrinum*: The CANADA LIQUIDAMBER, or the SPLEENWORT-LEAVED GALE; *a deciduous tree*; native of Canada and Pennsylvania.

1. The VIRGINIA LIQUIDAMBER will shoot in a regular manner to thirty or forty feet high, having its young twigs covered with a smooth, light-brown bark, while those of the older are of a darker colour. The leaves grow irregularly on the young branches, on long footstalks: They resemble those of the Common Maple in figure; the lobes are all serrated; and from the base of the leaf a strong mid-rib runs to the extremity of each lobe that belongs to it. They are of a lucid green, and emit their odoriferous particles in such plenty as to perfume the circumambient air; nay, the whole tree exudes such a fragrant transparent resin, as to have given occasion to its being taken for the Sweet Storax. These trees, therefore, are very proper to be planted singly in large opens, that they may amply display their fine pyramidal growth, or to be set in places near seats, pavilions, &c. The flowers are of a kind of saffron colour: They are produced at the ends of the branches the beginning of April, and sometimes sooner; and are succeeded by large round brown fruit, which looks singular, but is thought by many to be no ornament to the tree.

2. CANADA LIQUIDAMBER. The young branches of this species are slender, tough, and hardy. The leaves are oblong, of a deep green colour, hairy underneath, and have indentures

on their edges alternately, very deep. The flowers come out from the sides of the branches, like the former; and they are succeeded by small roundish fruit, which seldom ripens in England.

The PROPAGATION of both these species is the same, and may be performed by seeds or layers; but the first method is the best. 1. We receive the seeds from America in the spring. Against their arrival a fine bed, in a warm well-sheltered place, should be prepared. If the soil is not naturally good, and inclined to be sandy, it should be wholly taken out near a foot deep, and the vacancy filled up with earth taken up a year before, from a fresh pasture, with the sward and all well rotted and mixed by being often turned, and afterwards mixed with a sixth part of drift or sea land. A dry day being made choice of, early in March, let the seeds be sown, and the finest of this compost riddled over them a quarter of an inch deep. When the hot weather in the spring comes on, the beds should be shaded, and waterings given often, but in very small quantities, only affording them a gentle, nay, a very small sprinkling at a time. MILLAR says, the seeds of these plants never come up under two years. But, continues HANBURY, with this easy management, I hardly ever knew it longer than the end of May before the young plants made their appearance. The plants being come up, shading should still be afforded them in the parching summer, and a watering every other night; and this will promote their growth, and cause them to become stronger plants by the autumn. In the autumn, the beds should be hooped to be covered with mats in the severe frosts. These mats, however, should always be taken off in open weather; and this is all the management they will require during the first winter. The succeeding summer they will require no other trouble than weeding; though, if it should prove a very dry one, they will find benefit from a little water now and then. By the autumn they will be grown strong enough to resist the cold of the following winter, without demanding the trouble of matting, if the situation is well sheltered; if not, it will be proper to have the hoops prepared, and the mats ready, against the black northern frosts, which would endanger at least their losing their tops. After this, nothing except weeding will be wanted; and in the spring following, that is, three years from their

their first appearance, they should be taken up (for they should not be removed before, unless some of the strongest plants be drawn out of the bed) and planted in the nursery, a foot asunder, and too feet distant in the rows. Hoeing the weeds in the rows in the summer, and digging them in the winter, is all the trouble they will afterwards occasion until they are finally planted out. 2. These plants are easily encreased by layers. The operation must be performed in the autumn, on the young summer's shoots; and the best way is by flitting them at a joint, as is practised for carnations. In a strong dry soil, they will be often two years or more before they strike root; though, in a fine light soil, they will be found to take freely enough. By this method good plants may be obtained, though it is not so eligible as the other, if we have the conveniency of procuring the seeds.

L I R I O D E N D R O N.

LINNEAN Class and Order, *Polyandria Polygynia*: Each flower contains many males and many females: There are two SPECIES; one of them bearing a tulip-like, the other a lily-like flower; the former is not uncommon in our open grounds:

LIRIODENDRON *Tulipifera*: The TULIP-TREE, or the VIRGINIA TULIP-TREE; *a deciduous tree*; native of most parts of America.

The TULIP-TREE. In those parts of America where it grows common, it will arrive to a prodigious bulk, and affords excellent timber for many uses; particularly, the trunk is frequently hollowed, and made into a canoe sufficient to carry many people; and for this purpose no tree is thought more proper by the inhabitants of those parts. With us, it may be stationed among trees of forty feet growth. The trunk is covered with a grey bark. The branches, which are not very numerous, of the two-years-old wood, are smooth and brown; whilst the bark of the summer's shoots is smother and shining, and of a blueish colour. They are

are very pithy. Their young wood is green, and when broken emits a strong scent. The leaves grow irregularly on the branches, on long footstalks. They are of a particular structure, being composed of three lobes, the middlemost of which is shortened in such a manner, that it appears as if it had been cut off and hollowed at the middle : The two others are rounded off. They are about four or five inches long, and as many broad. They are of two colours ; their upper surface is smooth, and of a stronger green than the lower. They fall off pretty early in autumn ; and the buds for the next year's shoots soon after begin to swell and become dilated, inasmuch that, by the end of December, those at the ends of the branches will become near an inch long, and half an inch broad. The outward lamina of these leaf-buds are of an oval figure, have several longitudinal veins, and are of a bluish colour. The flowers are produced with us in July, at the ends of the branches : They somewhat resemble the tulip, which occasions its being called the Tulip-tree. The number of petals of which each is composed, like those of the tulip, is six ; and these are spotted with green, red, white, and yellow, thereby making a beautiful mixture. The flowers are succeeded by large cones, which never ripen in England.

The PROPAGATION of the Tulip-tree is very easy, if the seeds are good ; for by these, which we receive from abroad, they are to be propagated. No particular compost need be sought for ; neither is the trouble of pots, boxes, hotbeds, &c. required ; They will grow exceeding well in beds of common garden-mould, and the plants will be hardier and better than those raised with more tenderness and care. Therefore, as soon as you receive the seeds, which is generally in February, and a few dry days have happened, that the mould will work freely, sow the seeds, covering them three quarters of an inch deep ; and in doing of this, observe to lay them lengthways, otherwise, by being very long, one part, perhaps that of the embryo plant, may be out of the ground soon, and the seed be lost. This being done, let the beds be hooped ; and as soon as the hot weather and drying winds come on in the spring, let them be covered from ten o'clock in the morning till sun-set. If little rain happens, they must be duly watered every other day ; and by the end of May the plants will come up. Shade and watering in the hottest summer must

must be afforded them, and they will afterwards give very little trouble. The next winter they will want no other care than, at the approach of it, sticking some furze-bushes round the bed, to break the keen edge of the black frosts; for it is found that the seedlings of this sort are very hardy, and seldom suffer by any weather. After they have been two years in the seed-bed, they should be taken up and planted in the nursery, a foot asunder, and two feet distant in the rows. After this, the usual nursery care of hoeing the weeds, and digging between the rows in the winter, will suffice till they are taken up for planting out.

L O N I C E R A.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female: There are fourteen SPECIES; eleven of which will bear the open air of this country.

1. *LONICERA Caprifolium*: The ITALIAN HONEYSUCKLE; *a deciduous or evergreen climber*; native of Italy and the South of Europe.

2. *LONICERA Periclymenum*: The ENGLISH HONEYSUCKLE, or WOODBINE; *a deciduous or evergreen climber*; native of England, Germany, and the midland parts of Europe.

3. *LONICERA Sempervirens*: The TRUMPET HONEYSUCKLE; *a deciduous or evergreen climber*; native of America.

4. *LONICERA Diervilla*: The DIERVILLA, or ACADIAN HONEYSUCKLE; *a deciduous shrub*; native of Acadia and Nova-Scotia.

5. *LONICERA Symphoricarpos*: ST. PETER'S WORT, or the VIRGINIA HONEYSUCKLE; *a deciduous shrub*; native of Virginia and Carolina.

6. *LONICERA Cerulea*: The BLUE-BERRIED HONEYSUCKLE, or the UPRIGHT BLUE-BERRIED HONEYSUCKLE; *a deciduous shrub*; native of Switzerland.

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7. *LONICERA Alpigena* : The RED-BERRIED HONEYSUCKLE ; or the UPRIGHT RED-BERRIED HONEYSUCKLE ; or the ALPINE HONEYSUCKLE ; a *deciduous shrub* ; native of Savoy, and the Helvetian and Pyrenean Mountains.

8. *LONICERA Nigra* : The BLACK-BERRIED HONEYSUCKLE ; or the BLACK-BERRIED UPRIGHT HONEYSUCKLE ; a *deciduous shrub* ; native of Switzerland and the Alps.

9. *LONICERA Xylosteum* : The FLY HONEYSUCKLE ; a *deciduous shrub* : native of most of the coldest parts of Europe.

10. *LONICERA Pyrenaica* : The PYRENEAN HONEYSUCKLE, or DWARF CHERRY ; a *deciduous shrub* ; native of the Pyrenean mountains.

11. *LONICERA Tartarica* : The TARTARIAN HONEYSUCKLE, or DWARF CHERRY, or the DWARF CHERRY WITH HEART-SHAPED LEAVES ; a *deciduous shrub* ; native of Tartary.

1. The ITALIAN HONEYSUCKLE. The *varieties* of this species are, Early White Italian Honeysuckle, Early Red Italian Honeysuckle, Yellow Italian Honeysuckle, Late Red-flowered Italian Honeysuckle, Evergreen Italian Honeysuckle.

The *Early White Italian Honeysuckle* is that which first makes its appearance in May. The leaves of this sort are oval, and placed opposite by pairs, close to the branches, at the extremity of which the leaves quite surround it. The flowers grow in bunches round the ends of the branches, and have a very fine scent. Their blow will be soon over ; and they are succeeded by red pulpy berries, which will be ripe in the autumn.

The *Early Red* differs from the preceding in that the leaves are narrower, the fibres of the flowers are more slender, and it blows a little later in the spring.

The *Yellow Italian Honeysuckle* does not blow quite so early as the other, and the flowers are yellow : In other respects it is very much like the former.

Late Red-flowered Italian Honeysuckle is one of the best we have. The stem is tolerably firm ; the branches are few, and the leaves large ; the flowers are also large, of a deep-red colour, though less scented than the earlier sorts.

Evergreen Italian Honeysuckle. This is a stronger shooter than any of the sorts. The joints are more distant from each other. The leaves are large, of a thick consistence, unite, and surround

the

the stalk with their base, and continue all winter. The flowers are large, of a good red colour, with some paler stripes, and often continue to blow to the end of autumn.

2. **ENGLISH HONEYSUCKLE.** The *varieties* of this species are, The Common Woodbine of our Hedges, The Oak-leaved Honeysuckle, Red Dutch Honeysuckle, Midsummer Honeysuckle, Late German Honeysuckle, Long-blowing Honeysuckle, Evergreen Honeysuckle.

The *Common Woodbine* is known all over England, in our woods and hedges. There are still varieties of this sort, in its wild state; some having prodigious weak trailing branches; others again with tolerably woody stems. Some of the flowers are whitish, others are of a greenish cast; whilst others are possessed of a reddish tinge. As the flowers of none of these are nearly so beautiful as those of the cultivated sorts, only a plant or two of them should be introduced; which will cause some variety, and serve as a foil to set the others off. There is a *sub-variety* of this sort, with striped leaves.

Oak-leaved Honeysuckle is an accidental variety of our Common Woodbine. It differs in no respect from it, only that some of the leaves are shaped like those of the Oak-tree, on which account it is valuable, and makes a pretty variety in collections.

There is also a *sub-variety* of this sort, with leaves beautifully variegated, called *Striped Oak-leaved Honeysuckle*.

Red Dutch Honeysuckle is a very good sort. It flowers in June, and will often continue in blow a month or two. The branches have a smooth purplish bark, and may be known from the others even in winter, when they will appear with their swelled buds also of that colour. The leaves are of an oblong oval figure, and stand opposite by pairs on the branches, on short footstalks. The flowers are produced in bunches at the ends of the branches: Their outside is red, but within they are of a yellowish colour, and possessed of a delightful odour.

The *Midsummer Honeysuckle* is very much like the former, only the stalks are more tender, of a lighter-brown colour, and the tubes of the flowers are smaller, neither are they so red. It will be in blow about Midsummer; and the plant, whether set against a wall, pales, a hedge, or in the ground, will be all over covered with bloom, making an enchanting appearance to the eye,

eye, and perfuming the air all around to a considerable distance.

Late German Honeysuckle is very much like the Red Dutch, only it blows later. It will flower in July and August; and has all the properties of the other sorts, as to fragrance and beauty.

The *Long-blowing Honeysuckle* is still another variety of the Dutch. It will often exhibit flowers in June, July, and August, though the profusion will not be so great as that of the other sorts.

Evergreen Honeysuckle is another variety which retains its leaves all winter. It often flowers late in the autumn; and sometimes, in mild seasons, retains its bloom until Christmas, which makes it still more valuable.

3. TRUMPET HONEYSUCKLES. Of these are the following varieties: Virginian Trumpet Honeysuckle, Carolina Trumpet Honeysuckle, Evergreen Trumpet Honeysuckle.

Virginian Trumpet Honeysuckle is the most beautiful of all the sorts, though Nature has denied it smell. The branches are slender, smooth, and of a reddish colour. The leaves sit close to the branches by pairs. They are of an oblong oval figure, and their lower surface is not of so shining a green as the upper. Those at the extremity of the branches near the flowers surround the stalk, through which it comes. The flowers grow in bunches, at the ends of the shoot, and are of a bright scarlet colour. They will often be in blow from June to October; but the flowers have no scent.

Carolina Trumpet Honeysuckle differs in no respect from the former, only that the branches are more slender, and the leaves and flowers also are proportionably smaller, thereby making a pretty variety. This sort was introduced into our gardens from Carolina, as was the preceding from Virginia.

Evergreen Trumpet Honeysuckle. The leaves are of a thicker substance, and continue on the plants all winter; but the flowers are of a deep scarlet, like the other, and are possessed of little or no fragrance.

The PROPAGATION of these sorts is very easy. 1. The young branches being laid in the ground any time in the winter, with no other art, will become good plants by the autumn following, and may be then taken off for use. 2. But our common method

of propagating these forts is by cuttings. The best month for this work is October. By this way prodigious quantities of plants may be raised, and hardly any of them will fail growing. So easily may these delightful plants be multiplied, when a plant of each fort is once obtained.

The Evergreen Italian Honeyfuckle (the best of the evergreen forts) does not readily take by *cuttings*; so that in order to make sure of this plant, the young branches must be *layered*, any time in the autumn or winter, and by the autumn following they will have plenty of roots, and be good plants fit for removing to any place.

The Evergreen Honeyfuckles, though climbing plants, should occasionally be stationed in the evergreen quarters, as should all the other forts among the deciduous trees and shrubs; being so managed that their appearance may agree with those of upright growth. This is done by nipping off the young shoots (which would soon get rambling and out of reach), that the plants may be kept within bounds, and made to join in the collection with great beauty. Neither may they only be kept low, to almost what height is required; but they may, by fixing a stake for their support, be trained up to a stem, which will every year grow more and more woody and firm; so that in this case the eye must frequently overlook the tree, to take off the young shoots as they grow out, and not permit the head to grow too large and spreading for the stem, which it soon would do without this care; and with it, the head may be so kept in order as to bear good proportion to the stem, thereby causing the tree to have the appearance of an upright shrub.

4. *DIERVILLA* is a shrub of about the height of three or four feet. The branches are few, and larger in proportion than the height of the shrub; they are very full of pith, and when broken emit a strong scent. The leaves are placed opposite by pairs, on short footstalks: They are near three inches long, and about half as broad; and of an oblong heart-shaped figure, finely serrated, and end in acute points: Their upper surface is smooth, and of a fine green colour; their under is lighter, and has five or six pair of strong nerves running irregularly from the mid-rib to the borders. The flowers are produced in loose bunches, both at the ends and at the sides of the branches:

Each

Each is formed of one leaf; the tube is long, and the top is divided into five parts, which turn backward. They are of a yellow colour, and will be in blow in May, and sometimes most of the summer months. These flowers are succeeded, in the countries where they grow naturally, by black oval berries, each containing four cells. *Diervilla* forms an agreeable variety amongst other shrubs of its own growth, though the flowers make no great figure. It is very hardy with respect to cold; and may be planted in any part of the nursery where it is wanted.

No art is required to PROPAGATE this plant; it spawns, and thus propagates itself in great plenty. These suckers should be taken up in autumn, and planted out in the nursery: After remaining there a year or two, they may be finally taken up. This tree may be also increased by cuttings. They should be planted in October, very close, if a quantity are wanted. By the autumn following, they will have good roots. They may be taken up and planted in the nursery, like the spawn, for a year or two, and then set out to stand. Plants raised this way will not be quite so subject to throw out suckers as the others.

5. **St. PETER'S WORT.** St. Peter's Wort will arise to the height of about four or five feet. The main stems are ragged, and of a dirty dark brown. The branches are numerous and short, though oftentimes it sends out some trailing slender branches, which will grow to a great length. The leaves of this shrub constitute its greatest beauty: They are very numerous, small, about half an inch long, and of an oval figure. Their footstalks are exceeding short, and they stand opposite by pairs on the slender branches: These die in the autumn to a dark brown. The time of this plant's flowering is August. The flowers grow round the stalks: They are small, of an herbaceous colour, and make no figure.

The PROPAGATION is very easy. 1. If a spade-full of mould be thrown over each of the trailing branches, any time in the winter, they will by the autumn following have struck root; and these may be planted out in the nursery, to stand until they are of a proper size to be planted out for good. 2. This shrub may be also propagated by cuttings; and in order to obtain good cuttings for the purpose, the year before the plants should be headed near the ground, which will make them shoot vigorously

the summer following. These young shoots must be the cuttings to be planted. October is the best month for the work ; and if they are planted in a moistish soil, and have a shady situation, they will have taken good root by the autumn. If they are planted very thick, as cuttings commonly are, they should be all taken up and planted in the nursery a foot asunder, and two feet distant in the rows ; but if the living cuttings are no nearer than about a foot, they may remain without removing until they are planted out.

6. The **BLUE-BERRIED HONEYSUCKLE** is a shrub of about four feet in growth. The branches are round, smooth, and of a reddish-purplish colour. The leaves are oblong, spear-shaped, of a fine green, and stand opposite by pairs on the branches. The flowers, which are white, are produced in May from the sides of the branches, and are succeeded by blue berries, that will be ripe in August.

7. The **RED-BERRIED HONEYSUCKLE** will grow to the height of about five feet. The branches are very upright ; the young shoots are angular, and covered with a brown bark. The leaves are tolerably large, spear-shaped, a little resembling those of the mock Orange, and grow opposite to each other. The flowers are produced from the sides of the branches, on long footstalks : They are of a red colour, come out in April, and are each succeeded by a pair of red berries, which will be ripe the end of July or early in August.

8. **BLACK-BERRIED HONEYSUCKLE** differs from the Blue-berried only in that the seeds of this are black, and grow two together ; whereas those of the Blue-berried are single and distinct. Except this, there is hardly any difference to be perceived.

9. **FLY HONEYSUCKLE** will grow to the height of about seven or eight feet. The bark on the branches is of a whitish colour, which causes a variety, and makes it distinguished in the winter season. The leaves, which are placed opposite by pairs, are downy, and of an oblong oval figure. The flowers are white and erect : They are produced from the sides of the branches in June, and are succeeded by two red berries, which will be ripe in September.

10. The

10. The PYRENEAN HONEYSUCKLE, or DWARF CHERRY, is but a low shrub: It seldom arrives to more than a yard in height: The branches are produced irregularly. The leaves are smooth, oblong, and placed opposite by pairs. The flowers are white, produced from the sides of the branches, on slender footstalks, in April; and are succeeded by roundish berries, which will be ripe in September.

11. TARTARIAN HONEYSUCKLE, or DWARF CHERRY WITH HEART-SHAPED LEAVES, is a shrub of about three or four feet high: Its branches are erect, like the upright sorts; and it differs in few respects from them, except that the leaves are heart-shaped. It exhibits its flowers in April; and these are succeeded by twin red berries, which will be ripe in August.

These are the *Upright* sorts of the *Lonicera*; to which one method of PROPAGATION is common; and that may be performed two ways. 1. By seeds. Common garden-mould, dug fine, and cleared of the roots of all weeds, will serve for their reception. In this the seeds should be sown soon after they are ripe, about half an inch deep. After the beds are neated up, they will require no other care until the spring; when the weeds should be picked off as fast as they appear. Some of the plants by this time will have come up; but the far greater part will remain until the second spring before they shew themselves; so that the beds must be entirely untouched until at least two years after sowing. They will require no care all this time, except being kept clear of weeds; though if watering be afforded them in dry weather, it will be the better. After they are all up, and have stood a year or two in the seed-bed, they may be taken up and planted in the nursery, at small distances; and in two or three years they will be of a proper size to plant out to stand. 2. All these sorts may be also propagated by cuttings. These should be planted in October, in any sort of garden-mould that is tolerably good. If a quantity is wanted, they may be placed very close; and a small spot of ground will hold thousands. If the place be shaded, it will be a great advantage, as most cuttings are in danger of suffering by the violence of the sun's rays before they have struck, or whilst they are striking root. The winter following, they may be all taken up and planted out in the nursery, a foot asunder, and two feet distant in the rows, where they may stand until they are finally taken up for planting.

L Y C I U M.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female: There are eight SPECIES; one only of which is hardy enough to stand a severe winter in our climate.

LYCIUM Barbarum: The BOXTHORN; a deciduous creeper; native of Asia, Africa, and Europe.

The BOXTHORN. This species affords two varieties:

The Broad-leaved Boxthorn,

The Narrow-leaved Boxthorn.

The Broad-leaved Boxthorn is a rambling plant, and will, if let alone, in a few years overspread every thing that is near it. The branches are very many, and spread about in all directions. They will lie upon the ground, if unsupported, and will shoot, in a good soil, sixteen feet in length in one summer. Those branches that lie upon the ground will strike root; so that from every part fresh shoots will be set forth the next spring; and thus in a few years they will occupy a large compass of ground; so that whenever this plant is desired, they should be constantly kept within bounds. Indeed, from its exceeding rambling nature, not above a plant or two for variety or observation should be admitted in hardly any place. The branches of this plant are covered with a grey or whitish bark. The leaves are of a light, whitish-green, and of a thick consistence. They grow on the branches, on all sides, by threes. This plant, of all the sorts, is possessed of the longest spines (some of which are a foot or more in length). These spines are garnished with leaves; and on these they for the most part stand singly in an alternate manner. On the branches where they grow by threes, the middle one is always the largest. They are all of an oval, spear-shaped figure, are very smooth, a little glossy, and often continue till the middle of winter before they fall off. Besides the long leafy thorns before-mentioned, it produces many short sharp spines, of a white colour, near the ends of the shoots. The flowers are produced in August, and there will be often a succession of blow until the frosts come on. They grow singly at the joints, on short foot-stalks.

stalks. They are of a purplish colour, small, and are succeeded by no fruit with us, as I could observe.

The *Long Narrow-leaved Boxthorn* is also a very great Rambler. The branches are many, and are produced irregularly on all sides. It is possessed of spines, but these are very short, and the bark with which they are all covered is pretty white. The leaves are of a lanceolate figure, and are narrow and long. Their colour is that of a whitish-green, and they grow alternately on the branches. The flowers are small, and appear in July; and are succeeded by red berries, which ripen in September, and at that time are very beautiful.

The PROPAGATION of these sorts is by cuttings; for they will grow, if planted at any time, in any manner, and in almost any soil or situation, except a white clay. In a black rich earth, they will be the most healthful and most vigorous shooters; and though the cuttings will grow at all times, yet the winter-months are to be preferred for the purpose.

M A G N O L I A.

LINNEAN Class and Order, *Polyandria Polygynia*: Each flower contains many males and many females: There are four SPECIES:

1. *MAGNOLIA Glauca*: The SEA-GREEN MAGNOLIA, or the BAY-LEAVED TULIP-TREE, or the SMALL MAGNOLIA; a tall sub-evergreen shrub; native of Virginia and Pennsylvania.
2. *MAGNOLIA Acuminata*: The LONG-LEAVED MAGNOLIA; a sub-evergreen shrub or tree; native of Pennsylvania.
3. *MAGNOLIA Tripetala*: The UMBRELLA-TREE; a sub-evergreen shrub or tree; native of Carolina and Virginia.
4. *MAGNOLIA Grandiflora*: The EVERGREEN MAGNOLIA, or LAUREL-LEAVED TULIP-TREE; an evergreen tree; native of Florida and Carolina.

1. The SEA-GREEN or SMALL MAGNOLIA grows with us to about the height of ten or twelve feet. The wood is white; and

the branches, which are not very numerous, are covered with a smooth whitish bark. The leaves are tolerably large, and of two colours; their upper surface being smooth, and of a fine green, whilst their under is hoary. They are of an oval figure, have their edges entire, and often continue the greatest part of the winter before they fall off the trees. The flowers are produced at the ends of the branches, in May: Their colour is white; and the petals of which they are composed are concave and large; so that, together with the numerous stamina in the center, they present a beautiful appearance. They are also remarkable for their sweet scent; and are succeeded by conical fruit, which never ripens in England; but in the places where they grow naturally, a singular beauty and oddity is added to these trees by the fruit; for the seeds are large, and lodged in cells all around the cone. When quite ripe, these are discharged from their cells; and hang each by a long narrow thread, causing thereby an uncommon and pleasing effect.

2. LONG-LEAVED MAGNOLIA will grow to be near twenty feet high. The wood of this sort is yellow, and the branches are covered with a smooth light bark. The leaves are very large, being near ten inches long; their figure is oval, spear-shaped, and all end in points. The flowers, which are produced in May, are white, and composed of twelve obtuse petals, which, together with the number of stamina, make a good show. These also are succeeded by conical fruit, which never ripens in England.

3. The wood of the UMBRELLA-TREE, which grows to about twenty feet in height, is more spongy than any of the other species of *Magnolia*. It is called the *Umbrella-Tree*, from its manner of producing the leaves; for these are exceeding large, and so produced as to form the appearance of an umbrella. The flowers of this sort also are white, and the number of petals of which each is composed is about ten: They are succeeded by fruit of a conical figure, with many cells all round for the seeds, which never ripen in England.

All these sorts may be PROPAGATED by seeds, layers, and cuttings. By the first of these methods the best plants are raised, though it is a very tedious way, and must be followed with great patience

patience and trouble. We receive the seeds from those parts of America where they grow naturally. These are always preserved in sand, but, nevertheless, will not always prove good. As soon as possible after they arrive, which is generally in February, they should be sown in pots, about half an inch deep. The best compost for them is a fresh loamy earth, mixed with a fourth part of drift sand; and the seeds should be thinly sown in each pot. After this is done, the pots should be plunged up to the rims in the natural mould, under a warm hedge, where they may reap the benefit of the sun during the month of March and part of April; but when the rays of the sun begin to be strong and powerful, drying the mould in the pots very fast, they should be taken up and plunged again up to the rims in a shady border. By the end of May, if the seeds were good, the plants will come up; and all the summer they must be constantly attended with weeding and watering. At the approach of winter, they should be removed into the greenhouse, or placed under some cover; but in mild weather should always have the benefit of the open air and gentle showers. In March, the pots with their seedlings should be plunged into an hot-bed to set them forwards. Tanners bark is what the hotbed should be composed of; and as much air as the nature of the bed will allow, should always be afforded them. Water also must be given pretty often, though in small quantities, and the glasses must be shaded in the heat of the day. After this, about June, they should be inured to the open air; watering must still be afforded them; and this is what they require during the second summer. It has been a practice to plunge the pots into an hotbed soon after the seeds are sown; but this is a very bad method, for the young plants being thereby forced, grow thin and slender, and are seldom made to live longer than the first year. The second summer's management also has usually been, to plant the seedlings in March, in little pots, and then plunge them into a hotbed; but this is also a very bad way; for these seedlings, whether raised on hotbeds or the common ground, will be small, and not of consistence sufficient to draw the juices, though the powers of vegetation are assisted by an hotbed: Thus, hardly any of them survive this early transplanting. This having been the general practice, these plants have been always thought very difficult to preserve the second year; whereas all

those difficulties vanish, by observing the above-directed method; for by letting the seeds have only the natural soil, they will the first summer be formed into young plants, which, though small, will nevertheless be plants, and healthy. Thus being in the spring in their natural state, with their pores open to receive the nutritious juices, and not having suffered by being transplanted, the hotbed will so help them, that they will be pretty plants by the autumn. At the approach of winter, they must be removed again under cover, and the former assistance of an hotbed should be afforded them; and this should be repeated until the plants are grown to be a foot or more in length. The spring following, the mould should be turned out of the pots and shaken from the roots, and each plant put into a separate pot. For these, an hotbed of tanners bark should be ready, which will promote their growth, and make them healthy and fine. During the time they are in the bed, they should be shaded; and about Midsummer the pots may be taken out and placed in a shady border. The winter following, it will be proper to house them in severe frosty weather; but always observe to place them abroad in mild seasons. In March they may be turned out of the pots, the mould hanging to the roots, and planted with that in the places where they are to remain. 2. These plants may be also propagated by layers. The young shoots in the autumn are most proper for the purpose; and it is found that a gentle twist, so as just to break the bark about the joint, is a better method than any other in practice. These will sometimes strike root in one year, and sometimes you must wait more than two before you find them with any. After they have struck root, and are taken up, the best time for which is March, it is most eligible to plant each separately in a pot, and plunge them into an hotbed, as directed for the seedlings; and by the spring following they will be strong good plants for any place. 3. These plants may likewise be encreased by cuttings; by which they may be procured in plenty, if a person has the conveniency of a good stove; and without one this method should not be attempted. These cuttings should be planted in pots; and after they are set in the stove, must be duly watered and shaded: By observing these directions, many of them will grow. After this, they should be brought by degrees to the open air; the winter following they should

should be placed under an hotbed-frame, or some shelter ; and in the spring planted out to remain.

These plants often retain their leaves, especially when young, all winter, or the greatest part of it, in some situations; and in such they pass for evergreens.

4. **THE EVERGREEN LAUREL-LEAVED MAGNOLIA.** In the countries where it grows naturally, it arrives to the height and bulk of a timber-tree. Those countries are adorned with woods that are chiefly composed of this plant ; and indeed, a wood of so noble a tree, luxuriantly shooting, flowering, and feeding, healthy and strong, in soil and situation wholly adapted to its nature, must be a sight of which we can hardly form an adequate idea, or have a just conception of its beauty or grandeur ; for the tree naturally aspires with an upright stem, and forms itself into a regular head. Many other trees do the same ; but its most excellent properties consist of the superlative beauties of the leaves, flowers, and seeds. The leaves much resemble those noble leaves of the Laurel, from which it is so called, only they are larger, and of a thicker consistence : Many of them will be ten inches or more in length, and four broad, and all are firm and strong. Their upper surface is of a shining green, but their under is lighter, and often of a brownish colour. This tinge, which is not always found in all trees, is by some thought a great beauty, and by others an imperfection ; so various is the taste of different people. These leaves are produced without any order on the tree, and sit close to the branches, having no separate footstalks. The idea we can form of a tree, of seventy or eighty feet high, plentifully ornamented with such large and noble leaves, must be very great, and will induce us on their account only to endeavour to naturalize so noble a plant to our country. But let us consider their flowers. These we find large, though single, and of a pure white. They are produced at the ends of the branches, in July, and each is composed of about nine or ten large spreading petals. They have the usual properties of those that are broad and rounded at their extremity, of being narrow at the base, and their edges are a little undulated or waved. In the center of these petals are situated the numerous stamina, which the Botanist will be more curious in observing than the Gardener. But what affects all equally alike that have the sense
of

of smelling is, their remarkable fragrance, which indeed is of so great a degree, as to perfume the air to some distance ; and if one tree, when in blow, is sufficient to effect this, what conception should we form of the odours diffused in the countries where there are whole woods of this tree in full vigour and blow ! The fruit is nearly of the shape and size of a large egg ; but what make it most singular and beautiful are the pendulous seeds, of a fine scarlet, which being discharged from their cells, hang by long threads, and have an effect both striking and uncommon.

Rules have been given above for PROPAGATING deciduous *Magnolias*: the same rules observed, whether for seeds, layers, or cuttings, will raise plenty of this sort ; neither need any thing be added, except hinting to the Gardener, that this is more tender than the other sorts, and that from thence he should learn not to be over-hasty in committing these plants to the winter's cold, and planting them finally out. Snow is peculiarly injurious to them while young ; so that, at the approach of such weather, they must be particularly covered ; and if snow should happen to fall unawares, it should be carefully cleared off the leaves and stems. When these plants are set abroad to remain, if the place is not exceedingly well sheltered, it will be proper to have a shed at hand, which the Gardener may put together, to screen them from the severe northern frosts, and the black easterly winds, from which this shrub is most likely to suffer damage ; and these frosty winds are the most destructive to it when they come early in the winter, while the shoots are rather tender ; for then they are often destroyed, and the tree rendered unsightly for some time, though it will shoot out again. When this shrub is to be increased by layers, it will be necessary, after the operation is performed, to make an hedge of reeds, or something, at a little distance round it, to keep off the strong winds, and prevent them from blowing the layers out of the ground ; for without some guard this will be in danger of being done ; since the leaves being very large and strong, the wind must have great power over them.

M E D I C A G O.

LINNEAN Class and Order, *Diadelphia Decandria* : Each flower contains ten males and one female ; the males being connected at the base in two divisions : There are twenty-four SPECIES ; one of which, only, is admissible into our collection ; the rest being herbaceous plants.

MEDICAGO *Arborea* : The TREE LUCERNE, or TREE MEDICK, or MOON-TREFOIL ; *an evergreen shrub* ; native of Italy, Crete, and the islands of the Archipelago.

The TREE LUCERNE will grow to be six or seven feet high, and divides without any order into many branches, which are covered with a grey bark. There is a delicacy in the young shoots beyond what is found in most trees ; for they are white and silvery, and at the same time covered with the finest down. These young shoots are plentifully ornamented with leaves, many of which come out from a bud. They are trifoliate, and grow on long slender footstalks. One of the folioles is cuneiform, or shaped like a wedge ; the others grow out more into a lanceolate figure, have also a whitish look, and are downy, though not to so great a degree as the young twigs on which they grow. They have a large mid-rib, which contracts the borders in the evening, and this alters their position of sides on the alteration of weather. The flowers are produced from the sides of the branches, in clusters, on long footstalks. Each of these clusters will be composed of ten or twelve flowers, which are of a beautiful yellow. They are of the butterfly kind ; and are succeeded by moon-shaped pods, that ripen their seeds very well. One or other of these trees is to be found in blow almost at all times. The beginning of the blow is generally said to be in April or May ; and indeed then we may expect to see the flowers largest and in the greatest perfection ; but the flowers of these trees may be seen in July, August, and September ; and in greenhouses have been known to blow all winter ; which makes the tree more valuable to those who are desirous of seeing flowers in unusual months.

This shrub is by many supposed to be the true *Cytisus* of Virgil. It grows plentifully in Italy, in the islands of the Archipelago,

chipelago, and many other parts, where it is esteemed excellent fodder for cattle. "For this purpose, continues HANBURY, the raising of it has been recommended in England; but there seems no probability of such a scheme being brought to bear here; neither is it any way necessary to give ourselves the trouble to try experiments of this kind, as, should it even succeed to our utmost wishes, we have many sorts of fodder that will exceed it in quantity and quality, without any proportion to the extraordinary expence which must attend the raising any quantity of these shrubs, to cut for that use. The flowers, leaves, and top-shoots have, however, a fine pease-like taste, which is what, I make no doubt, most cattle would be fond of, and of which the inhabitants of some countries where it grows naturally reap the advantage; for the goats that feed on it yield a greater quantity as well as a more excellent kind of milk, from which good cheese is at length obtained, where these creatures have plenty of these shrubs to brouze upon.

"In our wilderness-quarters we must give this tree a very dry soil and a well-sheltered situation; for with us it is rather a tender shrub, and has been frequently treated as a greenhouse-plant; and this is another argument against any attempt to raise these shrubs for fodder in England: They are too tender to bear our severe winters without shelter; and should we proceed in raising sixty or seventy acres, a thorough frosty winter would destroy the greatest part of them; or, if the winter should not be so severe as totally to kill them, yet their end shoots would be so nipped and damaged, that it would be late in the summer before they would shoot out and recover this injury, and consequently small crops must be expected."

This plant is easily PROPAGATED by seeds or cuttings. 1. The seeds should be sown in the spring, a quarter or half an inch deep, in beds of fine light garden-mould. After they are come up, the usual care of weeding must be afforded them; and if they are shaded and now and then watered in hot weather, it will be so much the better. The beds must be hooped against winter, and plenty of mats must be ready to cover the plants when the frost comes on; and if this should be very severe, their covering should be encreased, or there will be danger of losing them all. In the spring the strongest may be drawn out, and planted in pots, to be housed for a winter or two,
until

until they are got strong ; but where a quantity is wanted, and there is no such conveniency, it may be proper to let them remain in the seed-bed another winter, for the conveniency of being covered in bad weather ; and then in the spring they may be planted out in the nursery, in lines two feet asunder, and at one foot distance. This nursery should be in a well-sheltered warm place, and they will be ready for transplanting whenever wanted. 2. These plants may be raised by cuttings. If a few only are wanted for ornamenting a shrubbery, the best way will be to plant these in pots, and set them up to the rims in a shady place, that they may have the conveniency of being housed in winter. When a quantity is wanted, they must take the chance of wind and weather, and the most we can then do is to plant them in fine light soil in a well-sheltered place. The latter end of March is the best time for the purpose ; they will strike root freely, especially if they are shaded and watered in dry weather ; and from this place they need not be removed until they be finally set out.

M E L I A.

LINNEAN Class and Order, *Decandria Monogynia* : Each flower contains ten males and one female : There are two SPECIES ; one of which will bear the open air ; the other is a hot-house plant.

MELIA *Azedarach* : The BEAD-TREE, a *deciduous tree* ; native of Syria.

The BEAD-TREE is a large plant : in its native country it will grow to the size of one of our pear-trees ; and there is no doubt, if our soil and situation suited it, that it would arrive to near that magnitude with us. The trunk is covered with a grey bark ; and the young branches, which are not very numerous, are quite smooth and green. The leaves are a very great ornament to this tree : They are compound, and very large, the whole leaf being a foot and a half, and sometimes near two feet long. Each is composed of a great number of folioles,

foliols, which are all terminated by an odd one. These little leaves have their upper surface of a strong shining green; their under is paler; and their edges are indented. The flowers are produced in July, from the sides of the branches, in long clusters: They are, separately, small, of a blueish colour, very fragrant, and each stands on a long footstalk. The flowers are succeeded by a yellow fruit, tolerably large, in which some nuts are enclosed, used in the Catholic countries to compose some sorts of rosaries; on which account this tree is called the Bead-Tree.

“ It is generally preserved in winter as a greenhouse plant; and indeed a few plants of this fine shrub ought always to be introduced in such places designed for trees as are proper for them. The reason of its being treated as a greenhouse plant is, because it is rather of a tender nature; and as the plants are not yet very plentiful in England, to this may be added, the desire of preserving those few a person has obtained. But notwithstanding the Bead-Tree’s being looked upon as a greenhouse-plant, some gardeners have ventured to set them abroad against warm walls, where they have stood the winter, and flourishes exceedingly well; others have planted them out in well-sheltered places only, where they have flourished and stood the brunt of many winters. What inclines me to introduce the *Melia* amongst our hardy trees is, that I have planted it in an open cold expanse, in a naturally damp and moist soil, where it has flourished for more than seven years, and displayed its beautiful foliage every summer, to the great pleasure of all beholders. This treatment and practice, however, must be used with caution; and whoever ventures to plant them abroad must have a dry soil, as well as a warm and well-sheltered situation, and then nothing but our hardest frosts will deprive the owner of these treasures. But, were they more tender, and if a person has no greenhouse, it will be worth while to venture the planting a few abroad, though there should be little chance of his keeping them longer than two or three winters, as they are scarce plants with us, and the leaves, the only beauties the tree can afford in that time, are compounded in such a manner as to afford admiration and pleasure.” HANBURY.

PROPAGATION. Care and trouble must be used before we can raise these plants to be of sufficient strength and hardiness to defend

defend themselves, when planted finally out. They are all to be raised from seeds ; and these are to be procured from the places where they commonly grow, which is in most of the Catholic countries. These seeds must be sown in pots, filled with light sandy earth, half an inch deep, the end of March. This done, the pots should be plunged into a bark-bed, which will cause them to come up. When the plants appear, they must have plenty of air and water ; and the open air must be afforded them pretty soon in the summer, that they may be hardened before winter. After they are taken out of the beds, they should be set in a shady place, and every other day watered till the autumn : and at the approach of winter, they should be removed into the greenhouse, with the hardiest of those plants. In April following, the plants should be taken out of the pots, and each planted in a separate small pot ; and after this is done, they should have the benefit of the bark-bed as before, to set them a-growing. Care must be taken to give them sufficient air, and not to draw them too much ; and after they are well entered upon a growing state, they must be hardened to the open air as soon as possible, and the pots taken out, and plunged up to the rims in a shady border, which will prevent the mould in the pots drying too much. They will require little watering, if this method be used, during the summer ; and at the approach of winter, they must be removed into the greenhouse as before, or placed under a hot-bed-frame, or some shelter. The next spring they must be set out with other greenhouse-plants, and managed accordingly, and removed into the house again with them. Every other year, they should be shifted out of their pots, with the earth to their roots, and planted in larger ; and by thus treating them as greenhouse-plants, and letting them have larger pots as they encrease in size, till they are six or eight years old, they will arrive to be good strong trees. Then in April, having made choice of the driest, warmest, and best-sheltered situation, there they may be planted, taking them out of the pots with all their mould ; which if done with care, they will never droop on being removed.

MENISPERMUM.

LINNEAN Class and Order, *Diœcia Dodecandria*: **Male** flowers containing twelve stamina, and female flowers containing two pistils, are situated upon distinct plants: There are eight SPECIES; three of them as follows:

1. **MENISPERMUM Canadense**: The CANADA MOONSEED; *a ligneous climber*; native of Canada and Virginia.

2. **MENISPERMUM Virginicum**: The VIRGINIA MOONSEED; *a ligneous climber*; native of the sea-shore of Virginia and Carolina.

3. **MENISPERMUM Carolinum**: The CAROLINA MOONSEED; *a herbaceous climber*; native of Carolina.

1. The CANADA MOONSEED will twine round trees to the height of fifteen or sixteen feet; and if there be no trees near for it to aspire by, its almost numberless branches will twist and run one among another, so as to form a thick close-set bush. These twining stalks are covered with a smooth green bark, though in some places they are often reddish, and in winter often of a brown colour. The leaves are very large, and stand singly upon long green footstalks, which also have a twining property, and assist the plant to climb. These leaves have their upper surface smooth, and of a strong green colour, but are hoary underneath. They are what are called peltated leaves: The footstalk is not near the middle of the leaves, but within about a quarter of an inch of the base, and from thence it branches into several veins unto the extremity. These peltated leaves are of a roundish figure in the whole, though they are angular, and being large, and of a good green, make it a valuable climber. The flowers are produced in July, from the sides of the stalks. They grow in bunches, and are of a greenish colour. They are succeeded by seeds, which often ripen well here.

2. The VIRGINIA MOONSEED differs very little from the other, except in the shape of the leaves; for it has the same kind of twining stalks, produced in great plenty, and the flowers and fructification are the same; so that nothing more need be observed of this, only that the leaves are often heart-shaped, and many of them have lobes like those of the common Ivy.

3. The

3. The CAROLINA MOONSEED is an herbaceous climber, and will, by the assistance of trees, rise to be ten or twelve feet high. The twining stalks are garnished with heart-shaped leaves, which do not divide into lobes like the others. These leaves, which are of a good strong green colour, have their under surface hairy, and are much smaller than either of the other sorts; the species itself being of all the least valuable, as it is scarcely ever known to produce flowers here.

All these sorts PROPAGATE themselves very fast. 1. If they are planted in a light soil, their roots will so spread and multiply the shoots, that in a few years after planting, each of them being wholly taken up, they may be parted, often into some scores of plants, which will be fit to set out, the weakest in the nursery to gain strength, and the strongest where they are to remain. Any time from October to March will do for taking off the suckers or parting the roots. 2. The young shoots, also, being covered with mould, will grow, and be good plants in one year. 3. They may be likewise raised by seeds; for if these are sown in the spring, in a bed of light earth, half an inch deep, they will come up, and require no other trouble than weeding until they are finally planted out, which may be two years after their appearance, and which may be done very well from the seed-bed, without previous planting in the nursery.

M E S P I L U S.

LYNNEAN Class and Order, *Icosandria Pentagynia*: Each flower contains about twenty males and five females. There are nine SPECIES; seven of which are here treated of:

1. *MESPILUS Germanica*: The GERMAN MEDLAR, or DUTCH MEDLAR; a *deciduous tree*; native of the south of Europe.

2. *MESPILUS Arbutifolia*: The ARBUTUS-LEAVED MEDLAR, or the VIRGINIA WILD SERVICE TREE; a *deciduous shrub*; native of Virginia.

3. *MESPILUS Amelanchier* : The AMELANCHIER ; a *deciduous shrub* ; native of Austria, France and Italy.

4. *MESPILUS Canadensis* : The CANADA MEDLAR ; a *deciduous shrub* ; native of Canada and Virginia.

5. *MESPILUS Cotoneaster* : The DWARF QUINCE ; a *deciduous shrub* ; native of the Pyrenees, Ararat, and many of the cold parts of Europe.

6. *MESPILUS Chama Mispilus* : The BASTARD QUINCE ; a *deciduous shrub* ; native of the Austrian and Pyrenean mountains.

7. *MESPILUS Pyracantha* : The PYRACANTHA, or EVER-GREEN THORN ; an *evergreen shrub or climber* ; native of Italy and the south of France.

1. The GERMAN MEDLAR in some situations grows to be a moderately large tree. It grows irregularly, and the branches are frequently crooked. The leaves are spear-shaped, large, entire, downy underneath, and grow on very short channeled footstalks. The flowers, which grow singly from the sides of the branches, are very large, and of a white colour. They come out the end of May, and are succeeded by that well-known fruit called the *Medlar*.

The *varieties* of this species are, *The Pear-fruited Medlar*, and *The Nottingham Medlar*. These are plants of more upright growth than the Dutch Medlar. Their leaves are narrower, and their flowers and fruit smaller.

2. ARBUTUS-LEAVED MEDLAR. This is frequently called Virginia Wild Service-tree with an Arbutus Leaf. It is a shrub about six feet high, frequently sending forth many suckers from the root, and branches from the sides of the plant. The leaves are spear-shaped, downy underneath, and indented. They grow alternately on very short footstalks. Their upper surface is a fine green colour, though white below ; and they die to a purple colour in the autumn. The flowers are produced in bunches from the ends and sides of the branches : They are small, white, come out in May, and are succeeded by a dark-brown fruit, like the common Haw, which will sometimes be ripe in the autumn.

3. AMELANCHIER. The stalks of this species are slender, branching a little, and grow to about four feet high. The young branches are of a reddish-purple colour, and the whole plant

plant is altogether destitute of thorns. The leaves are oval and serrated, about three quarters of an inch long, half an inch broad, green on their upper surface, and woolly underneath. The flowers are produced in bunches from the ends of the branches : Their colour is white ; and they are succeeded by small black fruit, of a sweetish taste, which will be often ripe in the autumn. This is a beautiful shrub, and in different parts goes by the various names of the *Dwarf Black-fruited Medlar*, the *New-England Quince*, *Vitis Idea*, &c. The young shoots which support the flowers are woolly underneath ; but this by degrees wears off, and they soon become of a purple colour, which remains all winter.

4. CANADA MEDLAR. This shrub, which rises to about five feet high, is free from thorns, and divides into a few branches, which are smooth, and of a purplish colour. The leaves are oval, oblong, smooth, slightly serrated, and grow on long slender footstalks. The flowers are white, and terminate the branches in small bunches : They come out in May ; and are succeeded by a purplish fruit, hardly so large as the common Haw.

5. DWARF QUINCE grows to about four or five feet high. The branches are few, smooth, and of a reddish-purple colour. The leaves are oval, entire, and grow on very short footstalks. The flowers are produced, two or three together, from the sides of the branches, without any footstalks. They are small, of a purplish colour, come out in May, and are succeeded by round fruit, of a bright red colour when ripe, in the autumn.

6. BASTARD QUINCE. This species grows to about four or five feet high. The branches are few, smooth, slender, and covered with a purplish bark. The leaves are oval, smooth, serrated, of a yellowish green, and grow on pretty long footstalks. The flowers are produced in small heads, from the wings of the stalks ; and between them are long narrow bractæ, which fall off before the flowers decay. Both flowers and bractæ are of a purplish colour : The fruit is small, and of a red colour when ripe.

All these sorts are to be PROPAGATED from the seeds, from layers, and by budding them upon Hawthorn stocks. 1. The seeds should be sown in the autumn, soon after they are ripe, in a bed of good earth, in a moist part of the garden. They

usually lie two years before they make their appearance; during which time the bed must be kept clean from weeds. When the plants come up, they must be frequently watered, if dry weather should happen; and this should occasionally be repeated all the summer. Weeds must be eradicated as they arise; and in the autumn, winter, or spring, the strongest plants may be drawn out, and set in the nursery ground, a foot asunder, in rows two feet distant from each other; whilst the others may remain in the seed-beds a year longer, to gain strength. In the nursery the Medlars should be trained for standards, if designed for fruit; or they may be headed to any height if for other purposes, while the lower kinds will require no other management than keeping them clean from weeds, and digging the ground between the rows in winter. 2. These plants may be also raised by layers, especially the five last sorts. The young branches should be laid early in the autumn; and by the autumn following many of them will have struck root, when they should be taken up, and planted in the nursery-ground, like the seedlings, to remain there for a year or two, before they are finally set out. 3. But the most expeditious, and by far the best way of raising these sorts is, by budding them upon stocks of the White-thorn. The Haws to raise the stocks should be gathered from such trees as are largest, shoot freest, and have the largest leaves and fewest thorns. When the stocks are one year old, they should be set in the nursery at the beforementioned distance. By the end of July, many of them will be ready for working; when they should be budded in the usual way, and they will easily take. Seldom any other method than this is practised for raising Medlars; and the other sorts, when growing on so firm a basis as the White-thorn, will be larger, have a better lock, and be more fertile in flowers and fruit.

7. The PYRACANTHA, OR EVERGREEN THORN, has been chiefly used to ornament or hide the ends of houses, barns, stables, or other buildings that break in upon the view; and for this purpose no plant is better adapted, as by its evergreen leaves, closely set, it will not only keep from sight whatever cannot regale that sense, but will be to the highest degree entertaining by the profusion of berries it will produce, and which will be in full glow all winter. But though the hiding as well as ornamenting of walls, &c. has been the chief use for this tree, it

It with very good reason planted as an evergreen in shrubby-quarters, where, notwithstanding its branches against walls, &c. are very flexible, it will become stronger and more woody, and will diffuse its leafy branches in an agreeable manner. The branches will be terminated with its fine fruit, which will glow in the quarters all winter, if they are not eaten by the birds; so that the tree before us is proper for any place. A further account of this shrub is almost needless, as it is well known; there being few towns which have not an house or two whose front is ornamented with them, being trained up to a great height; but when planted singly in quarters, though their stems naturally become stronger, they seldom grow higher than twelve or fourteen feet; and they will spread abroad their slender branches, and will often have a bushy, though not unpleasing form." These branches are covered with a smooth bark, which is of a dark-greenish brown colour, and often spotted with greyish spots; and they are often possessed of thorns, which, though not numerous, are sharp and strong. The leaves are spear-shaped, oval, and their edges are crenated. Their upper surface is smooth, and of a fine shining green; their under is paler; and they are produced in much plenty all over the shrub. The flowers are produced in bunches, like those of the common Hawthorn; though they are small, and not of so pure a white. They are often later before they are produced; and are succeeded by those large delightful bunches, or berries, which are of a fiery red, and which are as ornamental in the winter as any that are produced on trees of the berry-bearing tribe.

This plant is easily PROPAGATED by the berries, or from layers. 1. The berries should be sown in any common garden-mould made fine, an inch deep; and these will remain two years before they appear: though if the berries are old ones (for they will often remain on the tree two years) they will frequently come up the succeeding spring. After the plants have stood one or two years in the seed-bed, in the spring they should be planted out in the nursery, at small distances; and in about two years more they will be good plants, fit for any place. 2. They are easily propagated by layers; and this business should be performed in the autumn, on the young shoots. A

gentle twist may be given them ; though, if they are only laid down, and covered with earth, they will strike root by the next autumn ; nay, continues HANBURY, " I have known that, by some mould being accidentally thrown on a branch which was near the ground, roots have shot from almost every joint." These layers should be taken off any time in the winter ; the strongest will be fit for immediate use, while the weaker may be set in the nursery, like the seedlings, and in a very little time they will grow to be good plants.

M O R U S.

LINNEAN Class and Order, *Monoecia Tetrandria* : Male flowers containing four stamina, and female flowers containing two pistils, upon the same plant ; the male flowers being collected in a katkin. There are seven SPECIES ; four of which are proper for our collection :

1. *MORUS Alba* : The WHITE MULBERRY, or the SILK-
WORM MULBERRY ; a *deciduous tree* ; native of China, and
cultivated almost universally for the feeding of silkworms.

2. *MORUS Nigra* : The BLACK MULBERRY, or the COMMON
GARDEN MULBERRY ; a *deciduous tree* ; native of Persia,
and the maritime parts of Italy.

3. *MORUS Papyrifera* : The PAPER MULBERRY ; a *low deciduous tree* ; native of Japan.

4. *MORUS Rubra* : The VIRGINIA MULBERRY ; a *low deciduous tree* ; native of Virginia.

1. The WHITE or SILKWORM MULBERRY will grow to a large size : Its leaves are of a clear light green ; and open considerably earlier in the spring than those of the other species of Mulberry : Its fruit is also paler-coloured than that of the other sorts, which makes this take the name of the White Mulberry. " This tree (says HANBURY) possesses the peculiar property of breeding no vermin either growing or cut down ; neither does it harbour any sort of caterpillar, the Silk-worm only excepted, whose

whose food is its leaves. The Mulberry-tree was very earnestly recommended by King James to be planted in great quantities to feed these worms, in order to have silk of our own working: and, indeed, if we consider what vast sums the produce of silk brings into other states, we might find an undertaking of this nature worthy of a princely care and assistance." The Mulberry delights most in a light dry soil; but there is very little land in this kingdom, generally speaking, which might not be planted with these trees, and probably to great national advantage. Be this as it may, it is sufficiently *ornamental* to be admitted into a large collection: And, besides the *uses* of its leaves to the Silk-worm, EVELYN and HANBURY recommend it very strongly as a forest or timber-tree, and enumerate some of the uses of its wood; none of them, however, sufficiently striking to induce us to recommend it to the planter's notice merely as a timber-tree.

2. The BLACK or GARDEN MULBERRY is principally cultivated for the fruit; and in ornamental plantations a few of them will be sufficient, to make the collection general, as well as to be ready at all seasons for the notice and observation of the Botanist.

There is a *variety* of it, with jagged leaves, which makes it esteemed on that account; but the fruit is smaller than that of the common sort.

3. The PAPER MULBERRY is so called, because the inhabitants where the trees grow naturally make paper of the bark. It will grow to the height of about thirty feet; and exhibits its fine large leaves of different shapes, many of them being divided into several lobes, whilst others again are entire. They are of a fine strong green colour, though the under surface is paler than the upper. The flowers, as has been observed, are male and female; and the females are succeeded by small black fruit. It is the bark of the young shoots of which the paper is made; and for this use it is cultivated much in China, as well as Japan, where large plantations are raised. The plants are headed to within about a foot of the ground; and every year the crop of the summer's shoots is taken.

4. The VIRGINIA MULBERRY TREE will grow to be thirty or more feet high. It sends forth many large branches;

and the bark of the young shoots is of a blackish colour. The leaves are larger than the Common Mulberry, and rougher ; though in other respects they somewhat resemble them. It produces plenty of katkins, in shape like those of the Birch-tree ; and the female flowers are succeeded by a dark reddish fruit. This is a very scarce plant at present ; and is coveted by none but those who are desirous of making their collection general.

These several species of Mulberry may be PROPAGATED from seeds, by layers, and from cuttings. 1. Where the seeds can be procured, it is the most expeditious way of raising great quantities ; and whoever has a correspondence in the South of France, or in Italy, may through that channel obtain them. Having the seeds ready, let a fine warm border of rich mellow earth be prepared, and let this border be hooped, in order to support mats to defend the young plants, when they appear, from frosts. If no such border can be easily had, it will be proper to make a gentle hot-bed, and cover it with fat mould : This also must be hooped, as the border. Then sow the seeds in little drills, about a quarter of an inch deep. The middle of March is the best time for this work ; and when the young plants appear, which will be in about six weeks, they must be constantly covered with the mats in the night, if any appearance of frosts presents itself, as there often is at that season. During the summer they should be kept clear from weeds, and covered from the extreme heat of the sun while the hot months continue. Whenever any cloudy or rainy weather approaches, the mats should be always taken off, that the plants may enjoy the benefit of it. By thus carefully nursing the beds, keeping them clear from weeds, watering the plants in dry seasons, covering them from the parching sun, and uncovering them again in the night, cloudy or rainy weather, the plants by autumn will be got pretty strong ; tho' not so strong as to be left to themselves. The following winter they will require some care. When the frosts approach they must be carefully covered with the mats, as in the spring ; for without this protection, many of them would be destroyed, and the greatest part killed, at least down to the ground. In this bed they may stand two years, when they will be strong enough to plant out in the nursery. The ground for this purpose being double dug, the young plants should be set in rows, at two feet and a half distance,

and

and one foot and a half asunder in the rows. Here they may remain till they are of a sufficient size to be finally planted out.

2. Another method of propagating this tree is by layers. Whoever has not the convenience of obtaining the seeds, must procure a number of plants to be planted for stools. The ground on which these stools are to stand should be double dug, and the trees may be planted for this purpose two yards asunder. The size of the ground, and the quantity of trees for the stools, must be proportioned according to the number of plants wanted; though the reader should observe, that a few stools will soon produce many layers, as they throw out plenty of young branches, when the head is taken off. Having a sufficient quantity of stools that have shot forth young wood for layering, in the beginning of winter perform this business, as follows: Let the earth be excavated around each stool, and let the preceding summer-shoot be slit at a joint, and laid therein; a peg would be proper, to keep them from being torn up, and the fine mould should fill the interstices; the ground must be levelled, and the young twigs cut down to one eye above the surface, that it may just appear above the ground. Such is the method of layering this tree; and whoever performs the operation in this manner, will find in the autumn following, that the plants will have all taken good root, and made a considerable shoot in the stem. These plants will be now ready for the nursery-ground, in which they should be planted and managed in the same way as the seedlings. The stools, the second year after, will have exhibited a fresh crop of young wood for layering: And thus may this operation be performed every second year, till the desired quantity is raised.

3. By *cuttings* also all the sorts may be propagated, and this may be done two ways: By *cuttings planted in autumn*. These should be strong shoots of the last year's wood; and if the tree to be increased is not in so flourishing a state as to make such shoots, it should be headed the year before, and you will have cuttings proper for your purpose. The strongest shoots are the best; and October is the best month for the business. They should be a foot and a half long, and must be planted a foot deep, in a shady well-sheltered place, and a moist soil well worked and fine: By this method many good plants may be raised. These trees may also be increased by *cuttings*

cuttings planted in the summer. The latter end of June, or the beginning of July, is a proper time for the work, and the management must be as follows: Having a sufficient number of pots ready, the cuttings, or rather slips, from the trees, should be gathered, and planted in these pots, in any sort of common garden mould made fine. After this, they should have a good watering, and the pots be plunged up to their rims in the stove. Here, if water and shade be constantly afforded them, they will strike root and become good plants. It may be proper to observe farther in this place, that cuttings planted in pots in March, and managed this way, will readily grow. After they have struck root, they may be hardened by degrees to the open air. They should remain under cover in the pots all winter; for they will be rather tender at first, by being so nicely nursed; but in the spring, when all danger of frost is over, they may be turned out, with the mould, either in nursery-lines at a foot distance and two feet asunder in the rows, or else in the places where they are designed to remain; for they will be hardy enough, after growing openly this summer, to be in little danger of suffering by almost any weather.

M Y R I C A.

LINNEAN Class and Order, *Diœcia Tetrandria*: Male flowers containing four stamina, and female flowers containing two pistils; upon distinct plants. There are six SPÉCIES; two of which are of a fragrant quality, and may be admitted into shrubby quarters.

1. MYRICA *Cerifera*: The CANDLEBERRY-MYRTLE, or WAX-BEARING MYRICK; a *deciduous shrub*; native of Carolina, Virginia and Pennsylvania.

2. MYRICA *Gale*: The GALE, or DUTCH MYRTLE, or SWEET WILLOW; a *low deciduous shrub*; native of heathy bogs in many parts of England, and also of most of the northern parts of Europe.

1. CAN-

1. CANDLEBERRY-MYRTLE is a shrub about five feet in growth. Many slender branches are produced from the stalk : They are tough, smooth, and of a yellowish brown, having the older spotted with grey spots. The leaves grow irregularly on them all round ; sometimes by pairs, sometimes alternately, but generally at unequal distances. They are of a lanceolated figure ; and some are serrated at the top, whilst others have their edges wholly entire. They stand on very short footstalks ; having their upper surface smooth, and of a shining green colour, whilst their under is of a more dusky hue. The branches of the old plants shed their leaves in the autumn ; but the young plants, raised from seeds, retain them the greatest part of the winter ; so as during that season to have the appearance of an evergreen. But this beauty will not be lasting ; for they shed their leaves proportionally earlier as the plants get older. There are both male and female trees of this sort : The flowers are small, of a whitish colour, and make no figure ; neither does the fruit that succeeds the female, which is a small, dry, blue berry, though produced in clusters, make any show : So that it is from the leaves this tree receives its beauty and value ; for these being bruised, as well as the bark of the young shoots, emit the most refreshing and delightful fragrance, that is exceeded by no Myrtle, or any other aromatic shrub.

There is a *variety* of this species, of lower growth, with shorter but broader leaves, and of equal fragrance. This grows commonly in Carolina ; where the inhabitants collect, from its berries, a wax, of which they make candles, and which occasions its being called the *Candleberry-Tree*. It delights in a moistish soil.

2. The GALE, or SWEET WILLOW, is a shrub of about the same growth with the other. The branches are tough and slender, and covered with a smooth yellowish-brown bark. The leaves are of the same figure with the other, though not so large : They are placed in the same irregular manner on the branches ; and when bruised, like them, emit a delightful and refreshing scent. The flowers will appear in July, and the berries, which succeed them in clusters, make no figure to any except a botanist ; so that where that science has no share in
view,

view, it is on account of its fragrance that it is propagated. This sort grows wild upon bogs, in many parts, particularly the northern parts of England; so that when it is designed to be in the shrubbery, the moistest parts must be assigned it.

Both these sorts may be PROPAGATED by seeds or layers.

1. The seeds of the Candleberry-Myrtle, and the Spleenwort-leaved Gale, we receive from abroad; those of the Sweet Gale, from the bogs where they grow in England. The best way is to sow them in boxes of earth from a rich pasture, well broken and fine. They should be sown about half an inch deep; and when the hot weather comes on, should be set in the shade. They will often remain until the second year before they come up, especially those seeds that come from abroad. If the boxes are set in the shade, and the plants come up, they will require no other trouble the first summer than keeping clean from weeds; in winter they should be removed to a warm hedge or wall, where they may enjoy the benefit of the sun. In the following spring they will come up in plenty. In the beginning of May they should resume their shady situation; and this summer they will require no other trouble than weeding and watering in dry weather. In the winter they should be removed into a well-sheltered place; and this may be repeated two years; when, in the spring, they should be taken out of the boxes, and planted in the nursery, at about a foot asunder.

2. These sorts may be also easily propagated by layers; for this operation being performed on the young wood in the autumn, will occasion them to shoot good roots by the autumn following; many of which will be good plants, fit for any place.

3. These plants may likewise be increased by suckers; for many of them often throw them out in vast plenty; so that these being taken out, the strongest and best-rooted may be finally set out; whilst the weaker, and those with less root, may be planted in the nursery.

NYSSA.

N Y S S A.

LINNEAN Class and Order, *Polygamia Didecia* : Male flowers containing ten stamina, and hermaphrodite flowers containing five males and one female each, upon distinct plants : There is only one SPECIES :

NYSSA Aquatica : The TUPELO-TREE ; a *deciduous tree or shrub* ; native of watery places in America.

The TUPELO comprehends two *varieties* :

The Entire-leaved Tupelo.

The Serrated-leaved Tupelo.

The *Entire-leaved Tupelo-Tree*, in its native country, will grow to be near twenty feet high ; with us, its size will vary according to the nature of the soil or situation. In a moist rich earth, well sheltered, it will bid fair for twenty feet ; in others, that are less so, it will make slower progress, and will in the end be proportionally lower. The branches are not very numerous ; and it rises with a regular trunk, at the top of which they chiefly grow. The leaves are of a lanceolated figure, and of a fine light-green colour. They end in acute points, and are very ornamental, of a thickish consistence, soft, grow alternately on pretty long footstalks, and often retain their verdure late in the autumn. The flowers, which are not very ornamental, are produced from the sides of the branches, growing sometimes singly, sometimes many together, on a footstalk. They are of a greenish colour ; and, in the countries where they naturally grow, are succeeded by oval drupes, inclosing oval, acute, furrowed nuts. In England, they seldom produce fruit.

The *Serrated-leaved Tupelo-Tree* grows usually to be near thirty feet high, and divides into branches near the top like the other. The leaves are oblong, pointed, of a light-green colour, and come out without order on long footstalks. The flowers come out from the wings of the leaves on long footstalks. They are small, of a greenish colour ; and are succeeded by oval drupes, containing sharp-pointed nuts, about the size of a French Olive.

The PROPAGATION of these sorts is from seeds, which we receive from America. As soon as they arrive, they should be

sow

sown in large pots of light sandy earth, one inch deep. The gardener (who must not expect to see any plants come up the first spring), after this work is done, should plunge his pots up to their rims in the natural ground; and if it be a moistish place, it will be the better. Weeding must be observed all summer; and a few furze-bushes ought to be pricked round the pots in November, which will prevent the ground from freezing, and forward the coming-up of the seeds. In the next spring, the pots should be plunged into an hot-bed, and after that the seeds will soon come up. As much air as possible, and watering, should be afforded them; and they must be hardened soon, to be set out. The pots should be then plunged to their rims again in the natural mould; where they may remain until October. Watering must be given them, and they should also be shaded in the heat of the day. In October, they should be housed, with other greenhouse plants, or else set under a hot-bed-frame, or some other cover, all winter. The third spring they should be taken out of the larger pots, and each planted in a smaller, in which their growth may be assisted by a gentle heat in a bed; but if they are planted up to the rims in a moistish place, and shaded in dry weather, they will grow very well. Though by this time they may have become hardy, yet it will be proper to shelter them the winter following in bad weather. They will require little more care during their stay in the pots, which may be either two, three, or more years, if they are large enough; when in some spring they may be turned out, with the mould, into the places where they are to remain, which ought always to be moist and well-sheltered.

O N O N I S.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female; the males being divided at the base into two divisions: There are twenty-nine SPECIES; one of which, being of a shrubby nature, is proper for our purpose.

ONONIS

ONONIS *Fruticosa* : The SHRUBBY ONONIS, or PURPLE SHRUBBY REST-HARROW ; a *low deciduous shrub* ; native of the Alps and other mountainous parts of Europe.

The SHRUBBY ONONIS, or REST-HARROW, is a flowering-shrub of about a yard in growth. The branches are numerous, slender, and covered with a purplish-brown bark, having no spines. The leaves are trifoliate, grow irregularly on the branches, sit close, are narrow, spear-shaped, and their edges are serrated. The flowers come out in panicles from the ends of the branches. They are of the papilionaceous kind, and their general characters will indicate their structure. They stand on long footstalks, usually three on one. They are large, red, appear in May, and are succeeded by short turgid pods, which will have ripe seeds by July or August.

This sort may be PROPAGATED by the seeds. Common garden-mould of almost any soil, made fine, will do for the purpose. The beds should be made and the seeds sown in March, and covered about half an inch deep. In May the plants will appear ; and all the summer they must be weeded, and duly watered in dry weather. In the spring they should be taken out of the seed-bed, and planted in the nursery, a foot asunder, where they may stand a year or two, and then be planted out for good. As the seeds of this sort ripen exceedingly well with us, a few may be sown in different parts of the garden, and sticks placed for a direction. Where there are too many come up to grow together, they may be drawn, and transplanted for other places, or thrown away, if plenty of seeds can always be had ; and thus may these plants be raised in their proper places, without the trouble of removing.

P A S S I F L O R A.

LINNEAN Class and Order, *Gynandria Pentandria* : Each flower contains five males and three females ; the males and females growing together at the base : There are twenty-eight SPECIES ; one of which is proper for our collection :

PASSIFLORA.

PASSIFLORA *Cerulea* : The PALMATED PASSION-FLOWER, or the COMMON PASSION-FLOWER ; a *lignous climber* ; native of the Brazils.

The PASSION-FLOWER will climb to a prodigious height ; MILLAR says, " to forty-feet, with stalks almost as large as a man's arm ;" and adds, that it will make shoots of twelve or fifteen feet long in one summer. The leaves are palmated, being shaped like the hand ; each is composed of five folioles, the middle one of which is, like the fingers of the hand, longer, and the rest are shorter in the same proportion. These folioles are smooth, and have their edges free from serratures, and all together form a fine leaf. The leaves grow from the joints, on short footstalks, from whence also the clasps come out. From the joints, also, the flowers are produced, in July, August, and September. They are well known ; and in some countries serve as monitors to the religious, as shewing the instruments of our Blessed Saviour's Passion ; for they bring in the leaves of some of the sorts to represent some part of it, and the contorted cirrhi for the flagella with which he was scourged.

This extraordinary plant is very easily PROPAGATED ; for it takes freely either by cuttings, layers, or seeds. 1. By cuttings. These should be planted in a moist rich soil, at the beginning of March. The beds should be immediately hooped, and every day, during the drying March winds and sun, should be covered with mats ; and all that time they should have frequent waterings in the evening. In moist, hazy, or cloudy weather, they should be constantly uncovered ; and with this management many of them will strike root. If, through the heat of summer, the mats be applied, and evening waterings continued, the plants being thus kept cool and moist, will shoot to be good ones by the autumn. During the winter, the mats must be applied in frosty weather ; and in the spring they may be set out to stand. 2. Good plants are obtained by layers ; for these being laid in the ground in the spring, will have struck root, and be good plants for removing the spring following. 3. By seeds. These should be sown in pots filled with fine sandy soil, from a rich meadow ; and these plunged up to the rims in a shady border. In these pots they will readily come up ; and at the approach of winter should be removed into the greenhouse, or set under an hot-bed-frame. In the spring following they may

may resume their old place; and the spring after that may be set out for good.

The after-management will be, if planted to climb up trees in warm well-sheltered places, to take away the dead shoots in the spring that have been killed by the frosts; for these will not only appear unfightly, but by shortening the branches it will cause them to shoot stronger and flower better. If planted against high walls, they must be constantly nailed up as they shoot; and in the spring following the branches must be shortened, and the others taken away. If they be reduced to about a yard or four feet in length, and all weak shoots cut out, you will be pretty sure of having plenty of good bloom the summer after. This sort is succeeded by a large, oval, yellow fruit, which also looks well. As this plant is rather tender, and requires mats to be nailed before it in very hard frost, these mats must be always taken off immediately on the alteration of weather; for otherwise the stems will grow mouldy, and be destroyed that way. And as it is usual to lay straw, dung, &c. about the stems to prevent the frost penetrating the ground, this dung, &c. must not be laid up to the stem so as to touch it, but all round it; for if it is laid up to the stem, the bark will be destroyed, and the tree killed, and also very little chance remain of the root's throwing out fresh shoots, as it often does when the plant is killed down to the ground.

P E R I P L O C A.

LINNEAN Class and Order, *Pentandria Digynia*: Each flower contains five males and two females: There are five SPECIES; one of which is sufficiently hardy for this climate.

PERIPLOCA *Græca*: The PERIPLOCA, or VIRGINIA SILK, or CLIMBING DOG'S BANE; a *ligneous climber*; native of Syria.

The PERIPLOCA is a fine climbing plant, that will wind itself with its ligneous branches about whatever tree, hedge, pale, or pole is near it; and will arise, by the assistance of such support, to the height of above thirty feet; and where no tree or support is at hand to wind about, it will knit or entangle itself together, in a most complicated manner. The stalks of the older branches, which are most woody, are covered with a dark-brown bark, whilst the younger shoots are more mottled with

the different colours of brown and grey, and the ends of the youngest shoots are often of a light-green. The stalks are round, and the bark is smooth. The leaves are the greatest ornament to this plant ; for they are tolerably large, and of a good shining green colour on their upper surface, and cause a variety by exhibiting their under surface of an hoary cast. Their figure is oblong, or rather more inclined to the shape of a spear, as their ends are pointed, and they stand opposite by pairs on short footstalks. Their flowers afford pleasure to the curious examiner of nature. Each of them singly has a star-like appearance ; for though it is composed of one petal only, yet the rim is divided into segments, which expand in such a manner as to form that figure. Their inside is hairy, as is also the nectarium, which surrounds the petal. Four or five of the flowers grow together, forming a kind of umbel. They are of a chocolate colour, are small, and will be in blow in July and August, and sometimes in September. In the country where this genus grows naturally, they are succeeded by a long taper pod, with compressed seeds, hanging down to their tops.

The PROPAGATION of this climber is very easy ; for if the cuttings are planted in a light, moist soil, in the autumn or in the spring, they will readily strike root. Three joints at least should be allowed to each cutting : They should be the bottom of the preceding summer's shoot ; and two of the joints should be planted deep in the soil.

Another, and a never-failing method is by layers ; for if they are laid down in the ground, or a little soil only loosely thrown over the young preceding summer's shoots, they will strike root at the joints, and be good plants for removing the winter following.

P H I L A D E L P H U S .

LINNEAN Class and Order, *Icosandria Monogynia* : Each flower contains about twenty males and one female : There are only two SPECIES :

1. *PHILADELPHUS Coronarius* : The COMMON SYRINGA, or the CUCUMBER-TREE, or the MOCK ORANGE ; a *deciduous shrub* ; native place uncertain.

2. *PHI-*

2. *PHILADELPHUS Inodorus*: The CAROLINA SYRINGA, or the SCENTLESS SYRINGA; a tall deciduous shrub; native of Carolina.

1. The COMMON SYRINGA admits of three remarkable varieties: Common Syringa, Double Syringa, and Dwarf Syringa.

The *Common Syringa*, or *Mock Orange*, is a very beautiful shrub, about six feet in growth: It sends forth numerous branches from the root, which are brittle and full of pith. These also send out others from their sides that are shorter, stand generally opposite by pairs, and are alternately of contrary directions. These younger shoots are slender, jointed, and covered, some with a smooth pale-brown bark, others with a smooth bark of a darker colour. The leaves are large, and placed opposite by pairs on short footstalks. They are of an oval, spear-shaped figure, of a strong green colour, and have the flavour of a cucumber. Their edges are irregularly indented, their surface is rough, and they fall off early in the autumn. This shrub, by its flowers, makes a fine figure in May and June; for they are produced in clusters both at the end and from the sides of the branches. They are of a fine white colour, and exceedingly fragrant. The petals of which each is composed are large, and spread open like those of the Orange; and then forming branches, which stand each on its own separate short footstalk, and being produced in plenty all over the shrub, both at once feast the eye and the smell: The eye, by the pleasing appearance it will then have; the smell, as the air at some distance will be replete with the odoriferous particles constantly emitted from those fragrant flowers. These flowers, however, are very improper for chimneys, water-glasses, &c. in rooms; for in those places their scent will be too strong; and for the ladies in particular, often too powerful.

The *Double-flowering Syringa* is a low variety of this species, seldom rising to more than a yard high. The description of the other belongs to this sort, except that the leaves and branches are proportionally smaller and more numerous, and the bark of the shoots of a lighter brown. It is called the Double-flowering Syringa, because it sometimes produces a flower or two with three or four rows of petals; whereas, in general, the flowers, which are very few, and seldom

dom produced, are single. They are much smaller than those of the other; and you will not see a flower of any kind on this shrub oftener perhaps than once in five years. It is hardly worth propagating on this account; so that a few plants only ought to be admitted into a collection, to be ready for observation.

The *Dwarf Syringa* is still of lower growth than the other, seldom arising to more than two feet in height. The description of the first sort still agrees with this; only that the branches and leaves are still proportionally smaller and more numerous, and the bark is still of a lighter brown. It never produces flowers.

2. The *CAROLINA SYRINGA* is the tallest grower by far of any sort of the *Syringa*, and makes the grandest show when in blow; though the flowers are destitute of smell. It will grow to about fourteen feet in height; the branches are numerous and slender, and the bark on the young shoots is smooth and brown. The leaves also are smooth and entire, and placed opposite by pairs on longish footstalks. The flowers, which are produced at the ends of the branches, are of a fine white colour, and, being larger than those of the first sort, have a noble look.

The PROPAGATION of all the sorts is very easy: They are encreased by layers, cuttings or suckers. 1. The most certain method is by layers; for the young twigs being laid in the earth in the winter, will be good-rooted plants by the autumn following. 2. These plants may be encreased by cuttings, which being planted in October, in a shady moist border, many of them will grow; though it will be proper to let those of the *Carolina* sort remain until spring, and then to plant them in pots, and help them by a little heat in the bed. By this assistance, hardly one cutting will fail. 3. They may be also encreased by suckers; for all the sorts throw out suckers, though the *Carolina Syringa* the least of any. These will all strike root, and be fit for the nursery-ground: Nay, the *Double-flowering* and the *Dwarf* sorts are always encreased this way; for these plants having stood five or six years, may be taken up and divided into several scores. All the plants, however, whether raised from layers, cuttings, or suckers, should be planted in the nursery-ground to get strength, before they are set out for good. They should be planted a foot asunder, and the distance in the rows should be two feet. After this, they will require no other
care

are than hoeing the weeds, until they have stood about two years, which will be long enough for them to stand there.

P H I L L Y R E A.

LINNEAN Class and Order, *Diandria Monogynia* : Each flower contains two males and one female : There are three **SPECIES :**

1. **PHILLYREA Media :** The OVAL-LEAVED PHILLYREA, or Mock PRIVET, or the MEDIAL-LEAVED PHILLYREA ; a tall evergreen shrub ; native of the South of Europe.

2. **PHILLYREA Latifolia :** The BROAD-LEAVED PHILLYREA, or Mock PRIVET ; a tall evergreen shrub ; native of the South of Europe.

3. **PHILLYREA Angustifolia :** The NARROW-LEAVED PHILLYREA, or Mock PRIVET ; a deciduous shrub ; native of Spain and Italy.

1. The OVAL-LEAVED or MIDDLE PHILLYREA has the following varieties : Common Smooth-leaved *Phillyrea*, Privet-leaved *Phillyrea*, Olive-leaved *Phillyrea*.

The Common Smooth-leaved *Phillyrea* will grow to be twelve or fourteen feet high, and the branches are many ; the older of which are covered with a dark-brown bark, but the bark on the young shoots is of a fine green colour. They are oval, spear-shaped, and grow opposite, by pairs, on strong short footstalks. The flowers are produced in clusters, from the wings of the young branches. They are small, and of a kind of greenish-white colour ; they appear in March, and are succeeded by berries, which are first green, then red, and black in the autumn when ripe.

Privet-leaved *Phillyrea* will grow to be ten or twelve feet high, and the branches are covered with a brown bark. The leaves a little resemble the Privet ; they are of a fine green colour, and grow by pairs on the branches. They are of a lanceolate figure, and their edges are entire, or nearly so ; for some signs of serratures sometimes appear. The flowers grow

like others, in clusters, in March. They are whitish, and are succeeded by small black berries.

The *Olive-leaved Phillyrea* is the most beautiful of all the sorts. It will grow to be about ten or twelve feet high; and the branches, which are not numerous, spread abroad in a free easy manner, which may not improperly be said to give the tree a fine air. They are long and slender, and are covered with a light-brown bark; and on these the leaves stand opposite by pairs, at proper intervals, on short footstalks. They resemble those of the Olive-tree, and are of so delightful a green as to force esteem. Their surface is exceeding smooth, their edges are entire, and the membrane of a thickish consistence. The flowers are small and white, and like the other sorts make no show. They are succeeded by single roundish berries.

2. The BROAD-LEAVED PHILLYREA will grow to be about twelve feet high. The branches seem to be produced stronger and more upright than those of the former species. The bark is of a grey colour, spotted with white, which has a pretty effect; and the leaves grow opposite by pairs. They are of a heart-shaped oval figure, of a thick consistence, and a strong dark-green colour. Their edges are sharply serrated, and they stand on short strong footstalks. The flowers grow from the wings of the leaves in clusters, in March. They are of a kind of greenish-white colour, make no show, and are succeeded by small round black berries.

The varieties of this species are, the *Ilex-leaved Phillyrea*, the Prickly *Phillyrea*, the Olive *Phillyrea* with slightly-serrated Edges.

3. The NARROW-LEAVED PHILLYREA is of lower growth, seldom rising higher than eight or ten feet. The branches are few and slender, and they also are beautifully spotted with grey spots. The leaves, like the others, stand opposite by pairs. They are long and narrow, spear-shaped, and undivided, of a deep green colour, and of a thick consistence. Their edges are entire, and they also stand on short footstalks. The flowers, like the others, make no show. They are whitish, and grow in clusters from the wings of the branches, in March; and are succeeded by small round black berries.

The varieties of this species are, the Rosemary *Phillyrea*, Lavender *Phillyrea*, Striped *Phillyrea*, &c.

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The *Phillyreas* are to be PROPAGATED by seeds or layers.

1. By seeds. These ripen in the autumn, and should be sown soon after. The mould must be made fine; and if is not naturally sandy, if some drift sand be added, it will be so much the better. The seeds for the most part remain until the second spring before they come up; and if they are not sown soon after they are ripe, some will come up even the third spring after. They must be sown about an inch deep; and during the following summer should be kept clean from weeds. After they are come up, the same care must be observed, and also watering in dry weather; and if the beds are hooped, and the plants shaded in the hottest season, they will be so much the better for it. However, at the approach of winter they must be hooped, and the beds covered with mats in the hardest frosts, otherwise there will be danger of losing the whole crop; for these trees, though they are very hardy when grown tolerably large, are rather tender whilst seedlings. It will be proper to let them remain in the seed-beds, with this management, for two summers; and then, waiting for the first autumnal rains, whether in September or October (and having prepared a spot of ground), they should at that juncture be planted out, and this will occasion them immediately to strike root. The distance they should be planted from each other need not be more than a foot, if they are not designed to remain long in the nursery: If there is a probability of their not being wanted for some years, they should be allowed near double that distance; and every winter the ground in the rows should be well dug, to break their roots, and cause them to put out fresh fibres, otherwise they will be in danger of being lost, when brought into the shrubbery-quarters.

2. By layers they will easily grow. The autumn is the best time for this operation, and the young shoots are fit for the purpose. The best way of layering them is by making a slit at the joint; tho' they will often grow well by a twist being only made. When the gardener chooses the method of twisting a young branch for the layers, he must be careful to twist it about a joint so as only to break the bark; for if it is too much twisted, it will die from that time, and his expectations wholly vanish. But if it be gently twisted with art and care, it will at the twisted parts be preparing to strike root, and

by the autumn following, as well as those layers that had been slit, will have good roots; the strongest of which will be fit for planting where they are wanted to remain, whilst the weaker and worst-rooted layers may be planted in the nursery-ground like the seedlings, and treated accordingly.

P H L O M I S.

LINNEAN Class and Order, *Didynamia Gymnospermia*: Each flower contains four males and one female; two of the males being somewhat longer than the other two; and the seeds being naked. There are fourteen SPECIES; two of which are adapted to the shrubbery.

1. PHLOMIS *Fruticosa*: The YELLOW PHLOMIS, or JERUSALEM SAGE; a non-deciduous hoary shrub; native of Spain and Sicily.

2. PHLOMIS *Purpurea*: The PURPLE PHLOMIS, or PORTUGAL SAGE; a non-deciduous hoary shrub; native of Portugal and Italy.

1. The YELLOW PHLOMIS, or JERUSALEM SAGE. The varieties of this species are, The Broad-leaved Sage-tree of Jerusalem, The Narrow-leaved Jerusalem Sage-tree, The Cretan Sage-tree.

The *Broad-leaved Jerusalem Sage-tree* is now become very common in our gardens, which indeed is no wonder, as its beauty is great, and its culture easy. It will grow to be about five feet high, and spreads its branches without order all around. The older branches are covered with a dirty, greenish, dead, falling, ill-looking bark; and this is the worst property of this shrub: But the younger shoots are white and beautiful; they are four-cornered, woolly, and soft to the touch. The leaves are roundish and oblong, and moderately large; and these grow opposite at the joints of the shrub on long footstalks. They are hoary to a degree of whiteness, and their footstalks also are woolly, white, tough, and strong. The flowers are produced in June, July, and August, at the top joints of the young shoots,

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in large whorled bunches. They are of the labiated kind, each consisting of two lips, the upper end of which is forked, and bends over the other. A finer yellow can hardly be conceived than the colour of which they are possessed; and being large, they exhibit their golden flowers at a great distance, causing thereby a handsome shew.

The *Narrow-leaved Jerusalem Sage-tree* is of lower growth than the other, seldom rising higher than a yard or four feet. This shrub is in every respect like the other; only the shoots seem to have a more upright tendency of growth. The leaves also, which are narrower, are more inclined to a lanceolate form: They are numerous in both the sorts, and hide the deformity of the bark on the older stems, which renders them less exceptionable on that account. In short, these sorts are qualified for shrubberies of all kinds, or to be set in borders of flower-gardens, where they will flower, and be exceeded even in that respect by very few shrubs.

Cretan Sage-tree is still of lower growth than either of the former, seldom arriving to a yard in height. The leaves are of the same white, hoary nature; they are very broad, and stand on long footstalks. The flowers are also of a delightful yellow colour, very large, and grow in large whorls, which give the plant great beauty.

2. PURPLE PHLOMIS, OR PORTUGAL SAGE. The stalks of this species are woody, four feet high, and send forth several angular branches, which are covered with a white bark. The leaves are spear-shaped, oblong, woolly underneath, crenated, and grow on short footstalks. The flowers are produced in whorls, from the joints of the branches. They are of a deep purple colour, and have narrow involucre. They appear in June and July, but are not succeeded by ripe seeds in England.

There is a *variety* of this species, with iron-coloured flowers; and another with flowers of a bright purple.

There are some other shrubby sorts of *Phlomis*, of great beauty; but these not only often lose their leaves, and even branches, from the first frost, but are frequently wholly destroyed, if it happens to be severe. They are low shrubs, very beautiful, and look well among perennial flowers, where they will not only class as to size with many of that sort, but, being rather

rather tender, may with them have such extraordinary care as the owner may think proper to allow them.

The PROPAGATION of the above sorts is very easy, either by layers or cuttings. 1. If a little earth be thrown upon the branches, any time in the winter, they will strike root, and be good plants by the autumn following, fit for any place. Thus easy is the culture by that method. 2. The cuttings will also grow, if planted any time of the year. Those planted in winter should be the woody shoots of the former summer: These may be set close in a shady border; and being watered in dry weather, will often grow. This shrub may be propagated by young slips, also, in any of the summer months. These should be planted in a shady border, like Sage, and well watered. If the border is not naturally shady, the beds must be hooped, and covered with matting in hot weather. Watering must be constantly afforded them; and with this care and management, many of them will grow.

P I N U S.

LINNEAN Class and Order, *Monoccia Monadelphia*: Male flowers containing many stamina joined at the base, and female flowers containing one pistil, upon the same plant; the males being disposed in scaly bunches, the females in imbricated cones; There are twelve SPECIES:

1. *PINUS Larix*: The LARCH, or DECIDUOUS PINE; a tall deciduous tree; native of Switzerland, the Alps, and some parts of Italy.

2. *PINUS Sylvestris*: The WILD PINE; a tall evergreen tree; native of Scotland and the northern parts of the continent of Europe.

3. *PINUS Strobus*: The WEYMOUTH-PINE, or the WHITE PINE; a tall evergreen tree; native of New-England, Virginia, Canada, and Carolina.

4. *PINUS Pinca*: The STONE-PINE; a tall evergreen tree; native of Spain and Italy.

5. *PINUS*

5. *PINUS Cembra*: The CEMBRO, or the CEMBRO-PINE; an evergreen tree; native of Switzerland, the Alps, Siberia, and Tartary.

6. *PINUS Tæda*: The SWAMP PINE; a tall evergreen tree; native of the swamps of Virginia and Canada.

7. *PINUS Cedrus*: The CEDAR OF LEBANON; a tall evergreen tree; native of Mount Lebanon.

8. *PINUS Picea*: The YEW-LEAVED FIR; a tall evergreen tree; native of Scotland, Sweden, and Germany.

9. *PINUS Abies*: The EUROPEAN SPRUCE-FIR; a tall evergreen tree; native of the northern parts of Europe and of Asia.

10. *PINUS Canadensis*: The AMERICAN SPRUCE-FIR, or the NEWFOUNDLAND SPRUCE-FIR; a tall evergreen tree; native of Canada, Pennsylvania, and other parts of North America.

11. *PINUS Balfamea*: The HEMLOCK-FIR; a low evergreen tree; native of Virginia and Canada.

12. *PINUS Orientalis*: The ORIENTAL FIR; a low evergreen tree; native of the East.

1. The LARCH. This is a lofty tree: its branches are slender, and incline downward: the leaves are of a light green; and, like the Cedar of Lebanon, are bunched together like the pencils or little brushes of the painter. In spring, when the leaves and flowers are breaking out, the Larch has a particularly elegant appearance; and in winter, it gives variety to a wooded scene by a remarkableness in its naked branches: It is in good esteem as an *Ornamental*; and its timber is of the more *useful* kind: it is superior to that of most of the *Pinus* tribe. HANBURY says, "Many encomiums have been bestowed on the timber of the Larch: and we find such a favourable account of it in antient authors, as should induce us to think it would be proper for almost any use. Evelyn recites a story of Wittén, a Dutch writer, that a ship built of this timber and Cypress, had been found in the Numidian sea, twelve fathoms under water, found and entire, and reduced to such a hardness as to resist the sharpest tool, after it had lain submerged above a thousand four hundred years. Certain it is, this is an excel-

lent

lent wood for ship and house building. At Venice this wood is frequently used in building their houses, as well as in Switzerland, where these trees abound: So that, without all doubt, the Larch excels for masts for ships, or beams for houses, doors, windows, &c. particularly as it is said to resist the worm.

"In Switzerland, their houses are covered with boards of this wood, cut out a foot square; and as it emits a resinous substance, it so diffuses itself into every joint and crevice, and becomes so compact and close, as well as so hardened by the air, as to render the covering proof against all weather. But as such covering for houses would cause great devastation in case of fire, the buildings are confined to a limited distance, by an order of police from the magistrates. The wood, when first laid on the houses, is said to be very white; but this colour, in two or three years, is changed, by means of the sun and resin, to a black, which appears like a smooth shining varnish."

Of the *Common Larch* there are several varieties. The flowers which the commonest sort exhibits early in the spring are of a delicate red colour; another sort produces white flowers at the same season, and these have a delightful effect among those of the Red sort; whilst another, called the *Black Newfoundland Larch*, encreases the variety, tho' by an aspect little differing from the others. There are also Larches with *greenish* flowers, *pale-red*, &c. all of which are accidental varieties from seeds. These varieties are easily distinguished, even when out of blow: The young shoots of the White-flowering Larch are of the lightest green, and the cones when ripe are nearly white. The Red-flowering Larch has its shoots of a reddish cast, and the cones are of a brown colour; whilst the cones and shoots of the Black Newfoundland Larch are in the same manner proportionally tinged. The cones, which are a very great ornament to several sorts of the Pines, are very little to these. Their chief beauty consists in the manner of their growth, the nature and beauty of their pencilled leaves, and fair flowers; for the cones that succeed them are small, of a whitish, a reddish, or a blackish brown colour, and make no figure.

The method of PROPAGATION is from seed: The cones may be gathered in November, and should be left in a dry place till the spring. Just before sowing, let the cones be opened or torn
into

into four quarters by a knife, the point of which must be thrust exactly down the center, so that the seeds in their respective places may not be damaged. Formerly, great pains were bestowed in getting at the seeds, by cutting off the scales of the cones singly, and letting the seeds drop. This occasioned great expence to those who wanted a quantity of seeds; so that it is wholly laid aside now, for the more easy method of opening them with knives, and then threshing them. A certain price is generally allowed per thousand to the poor for opening them. When a sufficient quantity is opened, they should be threshed in a room, which will divide the scales, and dislodge the seeds, without injuring many of them. Three thousand cones will generally produce about a pound of good seeds. The cones being sufficiently broken, and the seeds threshed out, they should be winnowed or sieved, to have clear seeds; after which they will be ready for sowing. Let the seminary consist of a spot of fine light earth; and let the seeds be sowed in beds a quarter of an inch deep. In the spring, when the plants appear, they should be gently refreshed with water in dry weather, and carefully kept clean of weeds during the whole summer. By the autumn they will not have shot more than an inch or two; and in spring they should be pricked out in beds about three inches asunder. The spring following, they must be taken out of these beds with care, and planted in the nursery-ground, three feet asunder in the rows, and two feet distance; and here they may remain until they are fit to be planted out finally, which will be about the second or third year after. If they grow well in the nursery, it is advisable to plant them where they are to continue after having attained two years strength in that place, if the ground can possibly be prepared for their reception; since these trees always thrive best when removed small from the nursery, if they are of a sufficient size not to be injured by the weeds; if they are smaller, the owner must keep them clean. The Larch-tree will grow extremely well on almost any soil, as well in clays as in other sorts; it thrives amazingly on the declivities of hills, and sides of high mountains; it is hardy enough to resist the severest cold, therefore proper for all exposed places: And, as the timber is so valuable, and its growth so quick, it is a tree which may be propagated to the great advantage of the owner.

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2. **THE WILD PINE.** This species includes two *varieties*: The Scotch Fir and the Pineaster.

The Scotch Fir. This tree is too well known to require any description: and the method of propagating it will be fully treated of under the Article **TIMBER GROVES.**

The Pineaster. This is a large timber-tree, and naturally throws out very large arms, some of which will be nearly horizontal. "Some people think these trees are very ornamental on their account; for in the winter especially they appear naked, and are of a yellowish colour; and being spread abroad thus large, and without order, in the mixture of the more regular sorts of growing Firs, they make a good contrast. The Gardener must observe, that the leaves of this sort are very large and long, and of a lighter green than those of the Scotch Fir, which is another circumstance to direct him to its situation; and he must also observe, that those long and large leaves which ornament the younger branches only, give the tree a majestic air; and as the larger arms appear naked to view, so the younger, being thus plentifully furnished, have a noble effect, besides what beauty it receives from its numerous cones." **HANBURY.**

Its **PROPAGATION** may be the same as that of the Scotch Fir.

3. **THE WEYMOUTH PINE.** This is a princely tree, majestic and elegant in the highest degree: **HANBURY** says, "it will grow to more than a hundred feet high, and makes such excellent masts for ships, that the Legislature in the reign of Queen Anne enacted a law enforcing the encouragement of the growth of these trees in America, where they abound." As an *Ornamental* it stands first of all the Pines, and in the *uses* of its wood none of them excel it. The bark is smooth and soft to the touch, and though of a dusky brown colour, on the whole has a delicate look. The leaves are truly ornamental, though their colour is nothing extraordinary; but they are long and slender, and are formed into tassels, which hang in so easy and elegant a manner, as "to make one in love with the tree."

The **PROPAGATION** of the Weymouth Pine is not so difficult as has been heretofore understood: It may be raised in common seed-beds with ordinary care. **HANBURY** gives us the following directions "The seeds of the Weymouth Pine are larger than

than those of the Scotch Fir; and in order to raise the young plants, it will be proper to sow them in pots or boxes, which may be removed into the shade after the plants are come up, when the sun's rays are violent. If they are sown in beds of fine light earth, they should be hooped, and constantly covered with mats from the sun's heat, and as carefully uncovered when he sets. In about six or seven weeks after sowing, the young plants will appear, when they should be regularly guarded from birds, otherwise all your seeds, time, and trouble, will be lost; for if the birds take to them at their first coming up, and are unmolested, they will not leave a single plant. The plants being now above ground, the weeds should be constantly picked out, as they appear, lest the fibres of their roots mixing with those of the Firs, many of the latter may be drawn out with them. In dry weather they should be refreshed with water: But this must be done sparingly, and with the utmost caution; for as the stems of the young plants are very slender, by over-watering they are frequently thrown aside, which they hardly ever recover. Thus, continues HANBURY: "I have known gentlemen, who, in attempting to raise these trees, have seen the young plants go off without perceiving the cause; and the more watering and pains they have taken, have found the plants persist in this way more and more, to their great mortification and astonishment. In the spring following these plants should be pricked out in beds half a foot asunder each way; and here they may stand two years, when they may be either finally planted out, or removed into the nursery, at the distance of one foot asunder, and two feet in the rows. If care has been taken of them in the nursery, they may be removed at a considerable height with great assurance of success: for it is much easier to make this Pine grow than any of the other sorts: So that where they are wanted for ornament in parks, open places, &c. a show of them may be made in a little time.

"The soil the Weymouth Pine delights in most is a sandy loam; but it likes other soils of an inferior nature: and altho' it is not generally to be planted on all lands, like the Scotch Fir, yet I have seen it luxuriant and healthy, making broad shoots, on blue and red clays, and other sorts of strong ground. On stony and stony ground, likewise, I have seen some very fine

trees:

trees : So that I believe whoever is desirous of having plantations of this pine, need not be curious in the choice of his ground."

4. The **STONE PINE** will not grow to the height of the former ; and the bark is rough, and on some trees of a reddish colour. The leaves are long, very ornamental, and of a fine sea-green colour. The cones give this tree the grandest look ; for they are sometimes near six inches long, and are large, thick, and turbinated. The scales are beautifully arranged, and the whole cone is large and curious. " The kernels are eatable, and by many preferred to almonds ; in Italy they are served up at table in their deserts ; they are exceeding wholesome, being good for coughs, colds, consumptions, &c. on which account only this tree deserves to be propagated. **HANBURY** continues, It may be very proper here to take notice of a very great and dangerous mistake Mr. Miller has committed, by saying, under this article of Stone-Pine, that seeds kept in the cones will be good, and grow, if they are sown ten or twelve years after the cones have been gathered from the trees ; whereas the seeds of this sort, whether kept in the cones or taken out, are never good after the first year ; and though sometimes a few plants will come up from the seeds that are kept in the cones for two years before, yet this is but seldom ; neither must a tenth part of a crop be expected. This caution is the more necessary, as several gentlemen who had cones, upon reading Mr. **MILLER's** Book, and finding the seeds would take no damage when kept there, deferred the work for a season or two, when they thought they should have more conveniency either of men or ground for their purpose ; and were afterwards wholly disappointed, no plants appearing, the seeds being by that time spoiled and worth nothing."

The **PROPAGATION** of the Stone Pine is from the seeds, which may be procured from their large cones by the help of a vice ; for this will so effectually break the cones, without hurting the seeds, that they may be taken out with pleasure. The cones should be fresh, not older than a year or two at farthest, or the seeds will not be good ; for although it has been asserted, that the seeds of Pines in general will keep in their cones many years, yet the cones of this species of Pine are an exception, as the
seeds

seeds are rarely found good after the cones are one year old. The season for sowing these seeds is the middle of March. The weather being fine, and the ground fit for working, they should be sown about half an inch deep, in beds of fine light earth. In about seven weeks the plants will appear, which must be kept clear of weeds, and now and then watered in dry weather till July, by which time they will have made a tolerable shoot. In the month of July they should be taken out of the seed-beds, and pricked in others four inches asunder. Rainy and cloudy weather must be made choice of for this work; and after they are planted, the beds ought to be hooped, in order to be covered with mats in the heat of the day, which, however, should be always uncovered in the night. When they have taken to the ground, farther covering will be needless; and here they may remain, with only now and then watering, and keeping them clear of weeds, till the spring twelvemonth following; when, in the beginning of April, they should be planted out in the nursery, in well prepared ground, a foot asunder, and at two feet distance in the rows. Here they may stand two years, and then should be finally planted out. But if the trees are desired to be larger before they are brought to the spot where they are to stand, they must be kept constantly removing every two years in the nursery; for without this management this is a very difficult tree to be improved.

The Stone-Pine delights in a sandy loam; though, like most other Pines, it will grow well in almost any land.

5. The CEMBRO-PINE is a fine tree, though of lower growth than any of the former, and the leaves are very beautiful; for they are of a lighter green than most of the sorts, and are produced five in a sheath. They are pretty long and narrow; and as they closely ornament the branches all round, they look very beautiful, and render the tree on their account valuable. The cones of these trees also on their waving heads, have a good effect; for they are larger than those of the Pineaster, and the squamæ are beautifully arranged.

6. The SWAMP-PINE. Of this species there are many varieties: HANBURY gives us the following account of them:

"The *Three-leaved American Swamp-Pine* is a very large-growing tree, if it has the advantage of a moist situation. The leaves are of a fine green colour, and are exceeding long,

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slender,

slender, and beautiful ; three issue out of one sheath, and they closely garnish the younger branches. This is a tree worthy of propagation, whether we regard its timber, or its fine appearance when growing. Its timber is said to be equal in value to that of most sorts of the Pine ; and besides the beauty it receives from its fine long three-sheathed leaves, its head will be ornamented with very large cones, the good effect of which may be easily conceived.

“ The *Two-leaved American Pine* will grow to be a large tree, and the leaves are long ; two only grow in each sheath, which occasions its being so distinguished. The leaves are of a lighter colour than many of the others. On the whole, it is a fine tree, but will make very little variety, unless closely examined. The cones of this sort are much larger, and the scales more beautifully arranged, than those of the Scotch Fir, though they are not of the size of the former sort. This Fir also likes a moist soil.

“ The *Yellow American Pine*, the *Yellow Tough Pine*, and the *Tough Pine of the Plains*, I received by those names : There is some difference in the size and shape of the cones, though that seems inconsiderable. These three sorts make very little variety among themselves ; for they have nearly the same manner of growth ; and though I have none that are yet grown to any large size, yet they all seem to have a tendency to throw out large arms, a little like the Pineaster. How valuable the timber may be, I cannot tell ; but the younger shoots of all of them are exceeding tough, and, had we plenty, would make excellent bands for faggoting. The leaves are long, and of a yellowish green colour ; there are three, and sometimes two only in a sheath. If a large quarter of these were to be planted, to be seen at a distance, by any of the darker-coloured sorts of Pines, their very different shade must have a delightful effect.

“ *Bastard Pine* is another sort we receive from America, tho’ it differs very little from some of the other American sorts. The leaves are long and slender ; sometimes two and sometimes three grow in each sheath. They are generally of a yellowish colour towards their base, though their ends are green. The cones are rather long and slender, and the ends of the scales are so pointed, as to occasion its being called by some the *Prickly-coned Pine*.

“ *Frank-*

"*Frankincense-Pine* is another American sort, which we receive under that name. The leaves of it are long, and of a fine green colour. They are narrow, and three are contained in each sheath. They closely ornament the younger branches all around. This tree, however, beautiful as it is on their account, makes little variety among the Pines, for many others look like it; but by the cones it makes a striking difference; for these are exceeding large, even as large as those of the Stone-Pine; but their scales are looser, and their arrangement is not quite so beautiful.

"The *Dwarf-Pine*, as its name imports, is the least grower of all the sorts of Pines. It is an American plant, and the leaves grow two in a sheath; these are short, and of a pretty good green colour. This sort is coveted by some, on account of its low growth; but it is the least beautiful of any of the Pines, and has naturally a shabby look. The cones are small, and the scales are pointed. There is very little in the plant to make it desirable.

"There are many other sorts of American Pines, which we receive from thence with the like cant names as those of the above, which I have chose to retain, as they will probably be continued to be sent over, and that the Gardener receiving them as such may best know what to do with them. In many of those sorts I see at present no material difference, so am induced to think they are the same, sent over with different names. Some of the sorts above-mentioned differ in very few respects; but I have chose to mention them, as a person may be supplied with the seeds from Pennsylvania, Jersey, Virginia, Carolina, &c. where they all grow naturally: and having once obtained the seeds, and from them plants, they will become pleasing objects of his nicest observations."

These may all be propagated in the same manner as the WEYMOUTH.

7. The CEDAR of LEBANON. This, in its native soil, has always been considered as the most majestic tree in nature. The leaves grow in pencils like those of the Larch; and the extremities of its branches are likewise declining as those of the Deciduous Pine; to which at first sight it bears a strong resemblance; excepting in that it is less lofty and more spreading. There are some very fine Cedars of Lebanon in Stow Gardens. It ranks

among the first of the *ornamental* tribe : and the *use*, of its timber are universally acknowledged. HANBURY enumerates the following : " It was greatly used in the building of Solomon's temple, which at once convinces us of its superlative excellence. It is said to continue sound for two thousand years ; and we are told, that in the Temple of Apollo at Utica there was found cedar-wood of that age. The magnificent temples of the Pagans, as well as those of the true God, were chiefly built of this famous timber. The statue of the Great Goddess at Ephesus was made of this material ; and if this tree abounded with us in great plenty, it might have a principal share in our most superb edifices. The effluvia constantly emitted from its wood are said to purify the air, and make rooms wholesome. Chapels and places set apart for religious duties, being wainscotted with this wood, inspire the worshippers with a more solemn awe. It is not obnoxious to worms ; and emits an oil which will preserve cloth or books from worms or corruption. The sawdust will preserve human bodies from putrefaction, and is therefore said to be plentifully used in the rites of embalming, where practised."

The method of PROPAGATION is this : Having procured the cones, whether from the Levant or of our own growth, the seeds, a little before sowing, should be got out in this manner : Let a hole be bored with a gimblet exactly up the center of each cone, from the base to the apex ; put them into a tub of water, where they may remain till the next day ; then having a wooden peg, rather bigger than the gimblet, let it be thrust down the hole, and it will so divide the cones, that the different scales may be taken away, and the seeds picked out. In doing this, great care must be taken not to bruise and hurt the seeds, which will then be very tender. The soil in which you sow these seeds should be rather of a sandy nature ; or, for want of this, some mould taken from a rich pasture, and sieved with a little drift sand, will serve the purpose. Having the mould and seeds ready, in the beginning of March let the latter be sown in pots or boxes near half an inch deep : In about seven or eight weeks the plants will come up, when they should be removed into the shade from the heat of the sun ; where they may stand, but not under shelter, all the summer ; during which time they should
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be kept clean of weeds, and watered now and then. In the winter-season they must be removed into a warmer situation; or, if it is likely to prove very severe, they should be sheltered either by mats, or removed into the greenhouse, or covered with an hotbed-frame; for they are subject to lose their young tops at first, by the severity of frosts. In the beginning of April following, these plants may be pricked out in beds four inches asunder; and if the weather proves dry, they should be shaded and watered till they have taken root; after which they will want little shading and less watering. Indeed, nothing more is required than keeping them clean from weeds, and covering the ground so as to keep it moist, and prevent its chapping by the sun's rays. In these beds they may remain two years; when, in the spring, they should be transplanted to the nursery, where they may remain till they are finally planted out. During the time they are in the nursery, and after planting out, many will frequently have a tendency to droop in their leading-shoot: As soon, therefore, as this is perceived, an upright stake must be driven into the ground, to which the shoots should often be tied with bass matting to keep them in their upright growth. This, however, will not always effect it; for some, after being tied, so effectually turn the shoot downwards over the bandage, though loose, as to appear as if they were beat down on purpose. The Larch also will sometimes rebel in this way: So that it would not be amiss, in both cases, whenever they first discover any signs of such a tendency, to lighten the head, by nipping off the extremities of some few of the largest branches.

When these trees are planted out to remain, they should be left to Nature, after being properly fenced: Not a knife nor a hatchet should come near them; lopping even their lowest branches is so injurious, that it both retards their growth and diminishes their beauty.

The Cedar of Lebanon will grow well in almost any sort of soil or situation. As a proof of this, we need only observe, that in its native situation the roots are during part of the year covered with frost and snow.

8. The YEW-LEAVED FIR. This species includes the Silver Fir and the Balm of Gilead Fir.

The *Silver Fir* is a noble upright tree *. The branches are not very numerous, and the bark is smooth and delicate. The leaves grow singly on the branches, and their ends are slightly indented. Their upper surface is of a fine strong green colour, and their under has an ornament of two white lines, running lengthways on each side the midrib, on account of which silvery look this sort is called the Silver Fir. The cones are large, and grow erect; and when the warm weather comes on, they soon shed their seeds; which should be a caution to all who wish to raise this plant, to gather the cones before that happens.

The *Balm of Gilead Fir* has of all the sorts been most coveted, on account of the great fragrance of its leaves; tho' this is not its only good property; for it is a very beautiful tree, naturally of an upright growth, and the branches are so ornamented with their balmy leaves, as to exceed any of the other sorts in beauty. The leaves, which are very closely set on the branches, are broad; and their ends are indented. Their upper surface, when healthy, is of a fine dark-green colour, and their under has white lines on each side the mid-rib length-ways, nearly like those of the Silver Fir. These leaves, when bruised, are very finely scented; and the buds, which swell in the autumn for the next year's shoot, are very ornamental all winter, being turgid, and of a fine brown colour: and from these also exudes a kind of fine turpentine, of the same kind of (tho' heightened) fragranciness. The tree being wounded in any part, emits plenty of this turpentine; and HANBURY says, "it is supposed by many to be the sort from whence the Balm of Gilead is taken, which occasions this tree being so called. But this is a mistake; for the true Balm of Gilead is taken from a kind of *Terebinthus*; tho' I am informed, that what has been collected from this tree has been sent over to England from America (where it grows naturally), and often sold in the shops for the true sort."

These trees are PROPAGATED by sowing the seeds in a shady border, about the middle of March. They will readily come up if the seeds are good; but as this is not often the case, espe-

* Mr. MARSHAM says, "The tallest trees I have seen were Spruce and Silver Firs, in the vallies in Switzerland. I saw several Firs in the Dock-yards in Venice 40 yards long; and one of 39 yards was 18 inches diameter at the small end. I was told they came from Switzerland."

cially if they are procured from the seedsmen, they should be sown very close, otherwise you will be certain of having a very thin crop. The succeeding summer the plants will require no trouble, except keeping them clean from weeds; and the spring after that they should be pricked out in beds at about four inches distance from each other. Here they may stand for two years, when they should be planted in the nursery, in rows a foot asunder every way. The year, or at farthest two years, after they have been set in the nursery, they should be finally planted out; for if they are continued longer, many of them will die in the removal, and those which grow frequently lose their leading-shoot, and meet with so great a check as to be hardly able to get into a good growing state for several years.

The Silver Fir is exceedingly hardy, and will grow in any soil or situation, but always makes the greatest progress in a good rich loamy earth.

The latter must be planted in a deep, rich, good earth; neither will it live long in any other sort of soil. It matters little whether it be a black mould, or of a sandy nature, provided it be deep, and there is room for the roots to strike freely. As these trees have hitherto been planted without this precaution, and as such a kind of soil does not often fall in the ordinary course of Gardening, very few trees that have been planted many years are in a flourishing state; for if they do not like the soil, or if the roots begin to meet with obstructions, they soon begin to decline, which will be frequently in less than seven years; the first notice of which is, their leaves, which are naturally of a fine strong green colour, lose their verdure, and appear with a yellow tinge; and this colour grows upon them daily, until the appearance of the tree is changed. Another sign of this tree being at its *ne plus ultra* is, its producing vast plenty of cones; this argues a weakness, and they generally die away by degrees soon after. This is always the case where the soil does not wholly agree with them; but where it is deep and good, they will be healthy and flourishing, and produce cones for seeds.

9. The EUROPEAN SPRUCE FIR. This species includes the Norway Spruce, and the Long-coned Cornish Fir.

The *Norway Spruce* is a tree of as much beauty while grow-

ing, as its timber is valuable when propagated on that account. Its growth is naturally like the Silver, upright ; and the height it will aspire to may be easily conceived, when we say that the white deal, so much coveted by the joiners, &c. is the wood of this tree ; and it may perhaps satisfy the curious reader to know, that from this Fir pitch is drawn. The leaves are of a dark green colour ; they stand singly on the branches, but the younger shoots are very closely garnished with them. They are very narrow, their ends are pointed, and they are possessed of such beauties as to excite admiration. The cones are eight or ten inches long, and hang downwards.

The manner of PROPAGATING this tree is nearly the same as that of the Scotch Fir, only this will more easily grow when of a large size, and consequently will not require removing so often in the nursery. In the middle of March, having got the seeds out of the cones, sow them in a north border ; for when they come up, by being constantly shaded all the summer in such a situation, they will shoot much stronger, and be better to prick out the spring following in the nursery. In about six or seven weeks after sowing, the young plants will appear, when they should be screened with the usual care from the birds, which otherwise would soon destroy them. By the autumn, many of these young plants, if they are kept clean from weeds and watered in dry weather, will have shot three or four inches ; and in spring they should be carefully taken out of their seed-beds, so that the fibres may by no means be broken off or injured. Being thus cautiously taken up, they should be as carefully planted in the nursery-ground, at the distance of one foot asunder each way. Here they may remain, with keeping them free from weeds, for three years, when they should be set out in the places where they are designed to remain. But if larger trees are desired for this purpose, they should be taken up and planted in the nursery, a foot and a half asunder, in rows two feet and a half distant, where they may stand, if required, till they are six or eight feet high, without any other removing.

When they are set out finally, they may be planted, with tolerable hopes of success ; for the Spruce-Fir is not so nice or difficult in shifting its quarters as any of the other sorts of Pines. But though these trees may be transplanted at a good height, it
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is 'always' advisable to remove them to the places designed for them with all possible dispatch, as they are more certain of growing, and will recover the check occasioned in all trees by removal in less time.

The better the soil is, the faster will the Spruce Fir grow, though it will thrive very well in most of our English lands. In strong loamy earth it makes a surprising progress; and it delights in fresh land of all sorts, which never has been worn out by ploughing, &c. though it be ever so poor.

The *Long-coned Cornish Fir* differs scarcely in any respect from the Norway Spruce, except that the leaves and the cones are larger.

10. THE AMERICAN SPRUCE FIR. This species includes three varieties: The *White Newfoundland Spruce*: The *Red Newfoundland Spruce*: and the *Black Newfoundland Spruce*. These, however, differ so little, that one description is common to them all. They are of a genteel upright growth, though they do not shoot so freely or grow so fast with us as the Norway Spruce. The leaves are of the same green, and garnish the branches in the same beautiful manner as those of that species, only they are narrower, shorter, and stand closer. The greatest difference is observable in the cones; for these are no more than about an inch in length, and the scales are closely placed. In the cones, indeed, consists the difference of these three sorts: Those of the White species are of a very light-brown colour; those of the Red species more of a nut-brown or reddish colour; and those of the Black species of a dark or blackish colour. Besides this, there is scarcely any material difference; though it is observable, that this trifling variation seems to be pretty constant in the plants raised from the like seeds. These sorts will often flower, and produce cones when only about five or six feet high; and indeed look then very beautiful; but this is a sign of weakness in the plant, which it does not often fairly overget.

11. THE HEMLOCK FIR possesses as little beauty as any of the Fir tribe; though being rather scarce in proportion, it is deemed valuable. It is called by some the Yew-leaved Fir, from the resemblance of the leaves to those of the Yew-tree. It is a tree of low growth, with but few branches; and these are long

long and slender and spread abroad without order. The leaves do not garnish the branches so plentifully as those of any other sort of Fir. The cones are very small and rounded; they are about half an inch long; and the scales are loosely arranged. We receive these cones from America, by which we raise the plants; though this caution should be given to the planter, that this tree is fond of moist rich ground, and in such a kind of soil will make the greatest progress.

12. The ORIENTAL FIR. This is a low but elegant tree. The leaves are very short, and nearly square. The fruit is exceeding small, and hangs downward; and the whole tree makes an agreeable variety with the other kinds.

IN PROPAGATING the AMERICAN SPRUCE and the HEMLOCK FIR, the seeds being very small, a more than ordinary care should be taken of them, lest they be lost. They should be sown in pots or boxes of fine light mould, and covered over hardly a quarter of an inch. They should be then plunged up to the rims in a shady place, and netted, to save them, when they first appear, from the birds. If the place in which they stand is shaded, they will need little or no water all summer, unless it proves a very dry one; and being all of a very hardy nature, they will not require the trouble of covering in the winter. The beginning of July after that, the Newfoundland Spruce Fir should be pricked out in beds at a small distance, though the Hemlock Spruce should remain in the pots a year longer, as they will then be very small. After they are planted, they must be well watered, and the beds must be hooped, to be covered with mats for shade. In hot weather the mats should be put over the beds by nine o'clock in the morning, and constantly taken off in the evenings, and remain so, in cloudy and rainy weather. After they have taken root, they require no further care, until they are planted out; which, says HANBURY, "custom has taught us to do in the autumn or in the spring; but I have by much experience found, that July is a good month for planting out all the sorts of Firs; and if it were done in a wet time, and the weather should continue moist or cloudy for two or three weeks, it would be by far the best time in the whole year. Whoever, then, plants out Firs in July, unless

unless such weather happens, must shade and water them for a month or six weeks; but as shade is not to be afforded large trees of this kind, if there be many of them, their removal must be at the usual times, lest that parching time which often comes in the middle of summer burn them up before they can have time to take root. On this account, the planting of trees at Midsummer should be tenderly enforced; though I must declare, that I have repeatedly planted Scotch Firs of different sizes, some, one yard and more, others, six feet high, in the scorching heat, and left them to Nature, without giving them any assistance, and they have for the most part grown. Let others, if they please, make the experiment with a few, before they venture to plant out quantities at that season." This information and the manner in which it is conveyed do Mr. HANBURY great credit as a practical man and a writer.

P I S T A C I A.

LINNEAN Class and Order, *Dioecia Pentandria*: Male flowers containing five stamina, and female flowers containing three pistils, upon distinct plants: There are five SPECIES; four of which will endure our winters, provided they be placed in a warm well-sheltered situation:

1. *PISTACIA Terebinthus*: The COMMON TURPENTINE TREE; a *sub-evergreen tree*; native of Italy, Spain, and some parts of Africa.

2. *PISTACIA Vera*: The COMMON PISTACIA, or PISTACIA-NUT-TREE; a *sub-evergreen tree or shrub*; native of Persia, Arabia, Syria and India, from whence we receive the nuts.

3. *PISTACIA Trifolia*: The THREE-LEAVED PISTACIA, or TURPENTINE-TREE; a *low sub-evergreen tree*; native of Sicily.

4. *PISTACIA Narbonensis*: The LARGE-FRUITED TURPENTINE-TREE; a *sub-evergreen tree*; native of Persia, Armenia, Mesopotamia, and the south of France.

1. The

1. The COMMON TURPENTINE-TREE will grow to the height of about thirty feet. The bark of the trunk is thick, full of cracks, and of a dark-brown colour ; whilst that on the young shoots is thin and smooth. The leaves are pinnated and large, of a dark-green colour, and grow alternately on the branches. The folioles of which each leaf is composed are oval, spear-shaped, and consist of three or four pairs, which are placed on the mid-rib, besides the odd one with which they are terminated. There will be male and female flowers on different plants. They exhibit their bloom in April : The male flower is nothing but a katkin, and the females make no figure ; so that where philosophy has no view, it is from the desire of having an extensive collection that we procure these trees. In warm countries, the leaves of the *Pistacia* continue all the year ; with us, they fall off when attacked by the frosts. From the trunk flows the true turpentine ; in the room of which that taken from some of our Pines is generally substituted.

2. The PISTACIA-NUT-TREE is about twenty feet in height. The trunk of this species also is covered with a dark-brown bark, full of cracks, whilst the young shoots are smooth, and of a light-brown colour. The leaves are likewise pinnated, being composed of about two or three pairs of folioles, which do not always stand exactly opposite on the mid-rib, terminated with an odd one. These folioles are large, and nearly of an oval figure : Their edges turn backwards ; but have nevertheless a noble look. The male flowers are katkins of a greenish colour ; and the female flowers are very small, and produced in clusters from the sides of the branches. April is the month of their flowering ; and the female flowers are succeeded by the Pistacia nuts we eat.

3. The THREE-LEAVED PISTACIA is of about twenty-five feet growth. The bark of the trunk is very rough, and of a dark-brown colour ; but that of the young shoots is smooth, and lighter. The leaves of this species are trifoliate. The folioles are of an oval figure, of a very dark green colour, and are greatly ornamental to the plant. Different trees will have male and female flowers : The males are greenish katkins ; and the females have no petals, are small, and make no show.

4. LARGER-

4. **LARGER-FRUITED TURPENTINE-TREE** will grow to be about twenty-five feet high. The bark partakes more of a whitish colour, and is smoother, than those of the other species. The leaves also are pinnated; but the folioles of which each is composed are not always of the same number: Sometimes there are three, sometimes five pair of folioles to form the compound leaf. These are of a paler green than any of the other sorts, of a roundish figure, and stand on longish footstalks. The male flower of this species also is a katkin; and the females are succeeded by nuts, which by many are liked, being eatable, like the Pistachia-nuts. The leaves continue on these trees great part of the year, in warm countries.

THE PROPAGATION. The seeds, which we receive from abroad, should be sown as soon as possible after their arrival. A compost should be prepared for them, mixed in the following proportions: Six barrows full of earth, from a fresh pasture, taken from thence at least a year before, with the green sward, and well turned and rotted; three barrows of drift or sea sand; and one barrow of old lime rubbish, beaten to dust: These should be all well mixed together. The seeds should be sown about half an inch deep in pots, which may then be set under a warm wall or hedge, until the hot weather begins to come on, when they should be removed into the shade, and plunged up to the rim in some mould. At the approach of winter, they may be removed into a warm place, and in spring a hot-bed must be prepared for their reception. As these plants rarely come up the first year, this will be a better method than to plunge them in a hot-bed soon after they are sown; for even with this assistance, they will be later before they come up, will be very weak and tender plants in the autumn, and will require extraordinary future care to preserve them; whereas, if they are suffered to remain unforced for one turn, they will be preparing to vegetate, and of course will come up themselves the second spring; but an hot-bed will be necessary, as at that time it will make them shoot stronger. But this forcing must by no means be continued; a hitch only is to be given them, and they should immediately be hardened to the air. Watering and shade all summer must be allowed them; and they ought to be made as hardy as possible by the autumn. At the approach of winter, when other plants are to be set in the green-house, these should
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go with them, or be placed under an hot-bed frame. They should be set out with them in the spring, and in May the pots must be plunged up to the rim in the shade as before. The next winter they will require the green-house; and in the succeeding spring they will be two years old seedlings; at which time they should be shaken out of the pots, and each planted in a separate pot, in the same sort of compost in which the seeds were sown: This being done, they should be afforded a heat in the bed to set them forward. After they have begun shooting freely, the glasses should be taken off by degrees; and now they will want no more hot-beds. Watering must be given them in dry weather; and in the autumn they must be removed into the green-house, with other plants. And thus they should be treated as a green-house plant for four or five, or if even six years it will be so much the better; observing always, however, in the spring, to shift them into a fresh and larger pot every other year. The plants being now five or six years old, and being become tolerably strong and woody, may be set out in the places where they are to remain. These, as was observed, must be warm well-sheltered places, with a naturally dry soil; and if the two or three succeeding winters should prove mild and favourable, they will by that time be grown to be very hardy, and may bid defiance to almost any weather. The Common Turpentine-tree and the Pistachia Nut-tree, when grown old, resist our severest frosts; and the other sorts, though rather of a more tender nature, even if not old, will droop to none but the most piercing.

P L A T A N U S .

LINNEAN Class and Order, *Monoccia Polyandria*: Male flowers containing many stamina, and female flowers containing several pistils; upon the same plant; the males being collected in a globular katkin, and the females digested in a roundish ball: There are only two SPECIES:

1. *PLATANUS Orientalis*: The ASIATIC OR ORIENTAL PLANE; a tall deciduous tree; native of Asia.

2. PLA-

2. **PLATANUS Occidentalis:** The AMERICAN or OCCIDENTAL PLANE; a tall deciduous tree; native of North America.

1. The ORIENTAL PLANE rises to a very great height, and in its native soil grows to a prodigious size: The stem is covered with a smooth bark, which falls off annually. The bark of the young branches is of a dark-brown, inclining to a purple. The leaves are large and palmated, being deeply cut into five segments: their upper sides are of a deep green, and the under sides pale. The flowers are very minute: they come out at the same time as the leaves, which is in June. This is very late, and is no doubt a blemish to the beauty of this nevertheless highly ornamental tree. The ancients, we are told, were very partial to this tree; which is not to be wondered at when we consider the extensive canopy it forms, and the impenetrable shade given by the number and size of its leaves; and consequently the grateful coolness it must afford in a sultry climate. EVELYN and HANBURY class this and the next species amongst Forest or Timber-Trees; and their wood may rank with that of the Sycamore, which bears a considerable resemblance to this genus of plants, and which in the North of England is called the *Plane Tree*.

2. The AMERICAN PLANE. This also grows to a great size; the stem not only swells to an immense thickness; but, rising erect, shoots up perfectly straight and cylindrical to an amazing height. The Hon. Paul Dudley, in a Letter to the Royal Society, says, "he observed in New-England one of these Plane-Trees nine yards in girth, which continued its bulk very high; containing when felled twenty-two loads of timber." The bark is smooth, and, like that of the Asiatic species, falls off annually. The leaves are broad, with long footstalks, and are cut into angles at their edges, but not divided nearly so deep as those of the foregoing species: The upper side is of a light green, the under side paler: The flowers are small, and come out with the leaves about the same time as those of the Oriental Plane. Altogether, this tree is peculiarly refreshing to the eye, and truly ornamental.

Besides these two distinct species, there are two varieties:

The Maple-leaved Plane.

The Spanish Plane.

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The *Maple-leaved Plane*, says MILLAR, is certainly a seminal variety of the Eastern Plane. It differs from the two sorts before-mentioned in having its leaves not so deeply cut as those of the Eastern Plane, but much more deeply than those of the Occidental Plane. The footstalks of the leaves are much larger than those of either of the former, and the upper surface of the leaves is rougher.

The *Spanish Plane* has larger leaves than either of the other sorts. They are divided in a similar manner to those of the Maple-leaved Plane. Some of them are cut into five and others into three lobes: These are sharply indented on their edges, and are of a light-green. This is by some called the *Middle Plane*, from its leaves being shaped between those of the two first sorts. This too is probably a variety of the Oriental Plane.

The method of PROPAGATING the ORIENTAL PLANE is from seeds, when they can be easily procured; but whoever enjoys not this convenience must have recourse to layers. 1. The ground proper for the seminary should be moist and shady, well dug, and raked till the mould is fine; then in the autumn, soon after the seeds are ripe, let them be scattered over this ground, and the seeds raked in, in the same manner as turnep-seeds. In the spring, many of the young plants will come up, though you must not expect the general crop till the second year; the spring after which they may be taken out of the seminary, and planted in the nursery in rows one yard asunder, and at one foot and a half distance in the rows. Here they may remain, with the usual care of digging between the rows and keeping them clean, till they are of sufficient size to be planted out. 2. Where the seeds of these trees cannot be procured, layering must be the method of propagation. For this purpose, a sufficient number must be planted out for stools, on a spot of earth double dug. After they have stood one year, they should be cut down, in order to make them throw out young wood for layering. The autumn following, these should be laid in the ground, with a little nick at the joint; and by the same time twelve months after, they will be trees of a yard high, with a good root, ready to be planted out in the nursery, where they may be managed as the seedlings; and as the stools will

will have shot up fresh young wood for a second operation, this treatment may be continued at pleasure.

The AMERICAN PLANE is PROPAGATED by cuttings; which, if they be taken from strong young wood, and planted early in the autumn, in a moist good mould, will hardly fail of succeeding. They are generally planted thick, and then removed into the nursery-ground, as the layers of the other sort: But if a large piece of ground was ready, the cuttings might be placed at such a distance as not to approach too close before they were of a sufficient size to be planted out to stand; and this would save the expence and trouble of a removal. The Oriental Plane-tree will grow from cuttings; but not so certainly as this; and whoever has not the convenience of proper ground for the cuttings, must have recourse to layers, which, indeed, is for either sort the most effectual and sure method.

Plane-trees delight in a moist situation, especially the Occidental sort. Where the land is inclined to be dry, and Plane-trees are desired, the others are to be preferred. But in moist places, by the sides of rivulets, ponds, &c. the Occidental makes such surprising progress, that it might be ranked among the Aquatics.

P O P U L U S.

LINNEAN Class and Order, *Diœcia Oſandria*: Male flowers containing eight stamina, and female flowers containing one pistil; upon distinct plants; the males and females being similarly situated in long, loose catkins: There are five SPECIES:

1. *POPULUS Alba*: The ARBEELE, or WHITE POPLAR; a *deciduous aquatic tree*; growing common in England and most parts of Europe.
2. *POPULUS Nigra*: The BLACK POPLAR; a *deciduous aquatic tree*; this also grows common in England and most parts of Europe.
3. *POPULUS Tremula*: The ASPEN; a *deciduous tree*; native of England and the colder parts of Europe.

4. *POPULUS Balsamifera* : The CAROLINA POPLAR ; a deciduous tree ; native of Carolina and many parts of North America.

5. *POPULUS Heterophylla* : The VIRGINIA POPLAR ; a deciduous tree ; native of Virginia.

1. The WHITE POPLAR. This is a tall spreading tree, one of the largest of the aquatic tribe. The trunk is covered with a smooth whitish bark. The leaves are about three inches long, and stand upon footstalks about an inch in length : they are indented at the edges ; and are of a dark green on the upper surface, but white and woolly underneath. The Arbee! and Poplars in general, whilst young, are elegant and ornamental ; but the litter which is made by their katkins renders them disagreeable neighbours to kept walks and shrubberies. The uses of its wood are not many : it makes good boards, which have one peculiar good quality for flooring : they can with difficulty be made to burn, and will never blaze out like those of other wood : it would be needless to add, that the wood of the Poplar is the worst of fuel. It is a quick-growing tree, and may frequently be made use of as a screen to hide swamps or other deformities.

2. The BLACK POPLAR. This tree will also grow to a large size. Its leaves are not so large as those of the former. Their colour is a pleasant green ; they are heart-shaped, and appear about the middle of April.

The Lombardy Poplar, or the *Po Poplar*, seems to be a variety of the Black Poplar : the chief difference is, the Black Poplar throws out a large spreading head, whilst the Lombardy aspires with a remarkably close one, rising like an obelisk. There is a peculiar elegance in this plant when young, and in a moist rich situation it flourishes extraordinarily ; but it will not thrive in a dry barren soil, soon growing stunted and mossy.

3. The ASPEN. This tree will grow to a great height, and takes a good outline. Its leaves are smaller than those of the Black Poplar ; they stand on long slender flat footstalks, which render it of all the other sorts the most tremulous ; they are roundish, and smooth on both sides ; but do not make their appearance before the beginning of May : This, together with their inelegant shape and their want of brilliancy, render the Aspen the least ornamental of the Poplar tribe.

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The PROPAGATION of these three species of Poplar is very easy: they will grow from cuttings, setts, truncheons, &c. ; but, says HANBURY, " I by no means approve of the planting of truncheons, as has been often practised on boggy places; because I have always observed, that plantations of these luxuriant trees, attempted to be raised in this manner, have been frequently stunted, and very unpromising; and that the most promising trees have never equalled, in goodness or beauty, those planted with regular trees raised in the nursery. In order, therefore, to obtain a quantity of Poplars, proper to be planted in avenues or clumps, by the sides of rivulets, bogs, or any other places where they are desired, you must get a piece of ground double dug for the nursery. If the trees wanted are to be planted for good in a watery situation, this nursery-ground should be pretty near it; but if they are designed for pasture-grounds, fields, or such as have no more than a common degree of moisture, the soil of the nursery should be proportionably drier. The latter end of October is the best season for planting the cuttings; though they will grow if planted in any of the winter months. They should be all of those last year's shoots which have been vigorous, or at least not older than two years wood. These cuttings should be one foot and a half in length; and must be planted in the nursery-ground in rows, a yard asunder, and at a foot and a half distance from one another. They should be planted a foot in the ground, while the other half must remain to send forth the leading-shoot. Now in order to have one leading-shoot only, in summer these plants should be carefully looked over, and all young side-branches nipped off, in order to encourage the leading-branch. After this, no farther care need be taken of them than keeping them clean of weeds, and digging between the rows in the winter, till they have attained a proper size to be planted out.

4. The CAROLINA POPLAR will grow to be a large timber-tree, and has a majesty both enchanting and peculiar. It is an exceeding swift grower, inasmuch that it has been known to shoot ten feet in the space of one summer, and to be in thickness, nearest the base, an inch in diameter. The bark is smooth, and of a whitish colour; though that on the young shoots is of a fine green. The young shoots are cornered, having five angles; and the bark of which these are composed, being extended by the future growth, leaves only the traces on the older

branches of these angles. "This (continues HANBURY) gives the tree in winter a particular look; for at the base of each bud they curve over and meet. Thus there will be between every bud formed by the bark, figures like niches, as it were, of public buildings, tho' with an upright in the middle, at the top of each of which, like an ornament, is seated the bud, for the future shoot or leaf. These buds are only to be found on the younger branches; but the figure is retained on the bark of the older without those ornaments. But of all the trees in a collection, none more agreeably by its leaves entertains us than this, whether we consider their colour, figure, or size. The colour is a light shining green, which is heightened in the autumn by the strong mid-rib, and the large veins that issue from it, turning to a red colour; the lesser veins also being in some degree affected, occasions upon the same leaf a sweet contrast. Their figure nearly resembles that of an heart, and they are notched at their edges. But the chief majesty this tree receives is from the size of the leaves: I have measured some of the younger trees, and found the leaves ten inches long and eight broad, with a strong footstalk of four inches in length. These majestic leaves are placed alternately on the branches; though, as the tree advances in height, they diminish in size. This species shoots late in the autumn; and these young shoots have their ends often killed in hard winters; which is an imperfection, as it causes the tree to have a very bad look in the spring, before and when the leaves are putting out: However, these last will not fail afterwards to make ample amends for the former defect. The flowers afford no pleasure to the gardener: They are only katkins, like other Poplars, and fit only for the curious Botanist's inspection."

5. The VIRGINIA POPLAR grows to be a large timber-tree. The branches are numerous, veined, and angular. The leaves are heart-shaped, broad, slightly serrated, and downy on their first appearance. The flowers come out in loose katkins, and make little show: They appear early in the spring; and are succeeded by numerous downy seeds, which are dispersed all about to a considerable distance.

These two species are PROPAGATED, 1. By cuttings. In order to obtain proper cuttings for the purpose, the plants should be headed the year before, and a foot and a half of the thickest part
of

by a little round Crab, which, of all others, is the fourest, roughest, and most disagreeable, that can be put into the mouth.

There is a *sub-evergreen Crab* of America, supposed to be a *variety* of this species. Its natural growth seems to be not more than twelve feet; and the branches are covered with the same kind of smooth brown bark as our common Crab-tree. The leaves are long and narrow, and will often be found of different figures; for though some will be angular, others again are oblong, or of a lanceolate figure. They are fine, smooth, of a strong dark-green colour, and have their edges regularly serrated. They will remain until late in the spring, which rather entitles this shrub to a place here; though in an exposed situation, the ends of the branches will be often stripped of those ornaments, after a few Russian attacks of the piercing northern blasts: So that this tree, when considered as an evergreen, should always be planted in a well-sheltered place, where it will retain its leaves, and look very well all winter.

4. The QUINCE. There are many *varieties* of the Quince-tree, which are chiefly raised for the fruit. The Quince-tree seldom grows to be higher than eight or ten feet; and the bark on the branches is often of a kind of iron colour. The leaves are large and oval: Their upper surface is of a pleasant green colour, though often possessed of a loose downy matter, and their under side is hoary to a great degree. The flowers are produced in May, all along the branches: They grow upon young shoots of the same spring, and are very large and beautiful; for although each is composed of about five petals only, yet these are often an inch long, are broad and concave, and of a fine pale-red as they first open, though they afterwards alter to a white; and those flowers being produced the whole length of the branches, and bespangling the whole tree in a natural and easy manner, justly entitle this species to no mean place among the flowering kinds. They are succeeded by that fine large yellow fruit which is so well known, and which at a distance, on the tree, appears like a ball of gold. Indeed, these trees should always be planted at a distance from much-frequented places; for the fruit, valuable as it is when properly prepared for use, has a strong disagreeable scent, that

of the branches, growing one or two together at the joints ; but make no show. They appear in July ; and are succeeded by purple-coloured berries, which remain on the trees all winter, and look well.

The best way of PROPAGATING this plant is from its seeds. These should be sown, soon after they are ripe, in beds of fine sandy earth ; and if the garden does not naturally afford such, a few barrows full of drift sand must be brought to mix with the common mould. The beds being thus prepared, and made ready for sowing, the seeds should be sown about three quarters of an inch deep. It is very seldom that any of the seeds come up the first spring after ; if any do, there will be but few ; so that all the summer they must be kept clean from weeds. The spring following the plants will come up ; though many will lie until the third spring before they make their appearance. After they are come up, weeding and watering must be afforded them in the summer ; and with this care they may remain in the seed-bed two years. In March, being then two-years-old seedlings, they should be taken up, and planted in the nursery, at very small distances ; and here they may remain, with the usual nursery-care, until they are set out,

2. The EVERGREEN WINTERBERRY grows to about eight or ten feet high, sends forth many branches from the bottom to the top, and the whole plant assumes the appearance of an *Alaternus*. The leaves are oblong, spear-shaped, acute, serrated, of a strong green colour, and placed alternately on the branches. The flowers come out from the wings of the leaves, two or three together on a footstalk. They are small, white, appear in July, and are succeeded by red or purple berries, which remain on the trees all winter.

The PROPAGATION of this shrub is exactly the same as that of the deciduous species, except that this species is of a more tender nature ; and instead of setting out the seedlings in the nursery-ground, each should be set in a separate pot, to be placed under shelter in winter for a few years, until they are grown strong plants, and after that to be turned out, with the mould at the roots, into the places where they are designed to remain, which ought always to be in a dry sandy soil, and a well-sheltered situation,

P R U N U S.

LINNEAN Class and Order, *Icosandria Monogynia*: Each flower contains about twenty males and one female: There are fifteen SPECIES; twelve of which are here treated of; most of them well-known species; including a numerous tribe of orchard, garden, and shrubby plants.

1. **PRUNUS Padus:** The PADUS, or COMMON BIRD-CHERRY; a *deciduous shrub or tree*; native of England and most parts of Europe. .

2. **PRUNUS Virginiana:** The VIRGINIA PADUS; a *low deciduous tree*; native of Virginia, Pennsylvania, and Carolina.

3. **PRUNUS Canadensis:** The CANADIAN PADUS; a *deciduous shrub or tree*; native of Canada and many other parts of America,

4. **PRUNUS Mahaleb:** The MAHALEB, or PERFUMED CHERRY; a *tall deciduous shrub*; native of Switzerland and the north of Europe.

5. **PRUNUS Armeniaca:** The APRICOT; a *low deciduous tree*; whose native country is unascertained.

6. **PRUNUS Cerasus:** The CHERRY, or the CULTIVATED CHERRY; a *deciduous tree*; native of England and most parts of Europe.

7. **PRUNUS Avium:** The WILD CHERRY; a *tall deciduous tree*; native of England and the north of Europe.

8. **PRUNUS Domestica:** The PLUM; a *deciduous tree*; native of many parts of Europe. .

9. **PRUNUS Infitia:** The BULLACE; a *deciduous tree or shrub*; native of England and Germany.

10. **PRUNUS Spinosa:** The SLOE-THORN, or BLACK THORN; a *deciduous shrub or tree*; native of England and most countries of Europe.

11. **PRUNUS Lauro-Cerasus:** The LAUREL, or the COMMON LAUREL; an *evergreen shrub or tree*; native of Trebifond, near the Black Sea.

12. *PRUNUS Lusitanica*: The PORTUGAL LAUREL; *an ever-green shrub*; native of Portugal; also of Pennsylvania, and other parts of America.

1. The COMMON PADUS, or BIRD-CHERRY, is a tree of about twenty feet growth; oftentimes it rises higher. It grows with an upright stem, and makes a handsome appearance. The bark of the older shoots is of a dark-brown, inclined to a purple colour, and is besprinkled with a few greyish spots; while the preceding summer's shoots are smoother, and of a reddish cast. The buds early in the winter will begin to swell, for the future shoots. The leaves are large, and grow alternately on the branches. Their figure is nearly oblong. They are rough, and have their edges serrated. Their under surface is of a lighter colour than their upper, and they have two glandules at their base. The flowers are white, and produced in May, in long bunches. A kind of spike of white flowers grows from the sides of the branches; and these waving about on every side, in a loose and easy manner, have a genteel and pleasing effect. The flowers of which these spikes are composed, stand each on their own proper pedicles, and are all arranged alternately along the main stalk, which is tolerably long. These flowers are succeeded by fruit, which is a small berry, that ripens in August, at which period it will be black; but besides this, it will undergo the changes of being first green and afterwards red. When these berries are ripe, they are of a sweet, disagreeable taste, but so liked by the birds (which will flock from all parts to feed on them) as to occasion its being called the Bird-Cherry; and for their sake purely many persons plant a more than common quantity of these trees, that they may have these feathered songsters in greater plenty.

There is a variety of this tree, called the *Cornish Bird-Cherry*, which differs from it in some respects; but these differences are inconsiderable.

2. The VIRGINIA PADUS will grow to thirty or forty feet high, and is said to afford wood of great value. The bark is of a dark-brown, inclined to a purple colour, and spotted irregularly with some greyish blotches. The young shoots are of a lighter colour, and very smooth; and the whole tree is more ramose than the former sort. The leaves are oval, and of a shining green

green colour. Their edges are serrated, and placed alternately on the branches. They stand on short footstalks, and continue on the trees late in the autumn. Their flowers are white, and produced in May, in the same sort of long bunches as the other, and are succeeded by black berries, which are equally coveted by the birds, for whose sake only this species also is frequently planted. HAMBURY classifies this tree amongst his Forest-Trees, and says, "The wood is very valuable; is much used by the cabinet-makers; will polish very smooth, and display beautiful veins, both black and white." MILLER tells us, "that the *Padus Virginiana* will grow to be a large tree when it is planted in a moist soil, but in dry ground it rarely rises more than twenty feet high." He has also a *Padus Caroliniana* (probably a variety of this species), the seeds of which he says "were sent from Carolina by the title of BASTARD MAHOGANY, from the colour of the wood, which is somewhat like Mahogany." He adds, however, that "this seems to be little more than a shrub, if we may judge from the growth here."

3. The CANADA PADUS is of much lower growth than the former sorts. The branches are smooth. The leaves are broad, spear-shaped, rough, downy, and destitute of glands, like those of the former species. The flowers grow in long, branching bunches: Their colour is white; they come out in May, and are succeeded by small, round, black berries, which will be ripe in the autumn.

4. The PERFUMED CHERRY seldom grows to be more than ten or twelve feet high. The branches are covered with a smooth, whitish-grey bark. The leaves are small, of a lucid green colour, of an oval figure, and stand alternately on the branches. The flowers are white, produced in May in roundish clusters, and are succeeded by berries, of which the birds also are very fond. The wood of all these sorts is much esteemed by the cabinet-makers, particularly amongst the French, as it always emits a very agreeable odour.

5. The APRICOT-TREE is often planted as a flowering, shrub; for though it will grow to be thirty feet high, it may nevertheless be kept down to what height the owner desires.

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" This tree, says HANBURY, as well as most sorts of fruit-trees, is exceeded by few in ornament ; for being permitted to grow in its natural state to twenty or thirty feet high, with all its luxuriancy of branches, covered with their delightful heart-shaped leaves, what a glorious figure will it present ! But when we reflect on the fine appearance such a tree must make, early in the spring, when covered all over with the bloom of such fine flowers as those of the Apricot are known to be, this enhances the value ; and either of these motives is sufficient for introducing these trees into plantations of this kind. Add to this, some of the sorts, in warm well-sheltered situations, will produce fruit when growing in this manner, as well as if planted and trained against walls ; so that additional returns will be made by the fruit to the curious planter of these trees."

6. The CHERRY-TREE of our orchards is too well known, with all its varieties, to need any description. HANBURY observes, " were the tree scarce, and with much difficulty propagated, every man, tho' possessed of a single tree only, would look upon it as a treasure. For besides the charming appearance these trees have, when beset with, as it were, all over with bloom in the spring, can any tree in the vegetable tribe be conceived more beautiful, striking, and grand, than a well-grown and healthy Cherry-tree, at that period when the fruit is ripe ?"

The many kinds of Cherry-trees afford an almost endless variety ; all differing, in some respect, in their manner of shooting, leaves, flowers, or fruit : two in particular demand admission into the pleasure-garden ; the Double-blossomed and the Red-flowering.

The *Double-blossomed Cherry*. The pleasing show the common Cherry-tree makes when in blow is known to all ; but that of the Double-blossomed is much more enchanting. It blossoms, like the other, in May ; the flowers are produced in large and noble clusters ; for each separate flower is as double as a rose, is very large, and placed on long and slender footstalks, so as to occasion the branches to have an air of ease and freedom. They are of a pure white ; and the trees will be so profusely covered with them, as to charm the imagination. Standards of these trees, when viewed at a distance, have been compared to balls

due homage to this our national favour! How could our Kings be invested with the ensigns of royalty, or our Creator receive at stated times the gratitude and praise which we owe to him, with greater propriety than under the shadow of this sacred tree? Acts like these would stamp it with that respectability and veneration which is due to it: and to corroborate these ideas, as well as to institute such laws as might be found necessary, the state of the growth of Oak in Great Britain ought to be a standing enquiry of the British Legislature. It is far from being impracticable to have annual returns of Oak fit for ship-building in every parish in the kingdom; with the distance it stands from water-carriage. It avails but little our making laws of police, or forming foreign alliances, unless we take care to secure in perpetuity the defence of our own coast. It is idle to think of handing down to posterity a national independency, if we do not at the same time furnish them with the means of preserving it.

THE PROPAGATION of the ENGLISH OAK. We do not purpose in this place to give directions for raising woods or plantations of Oak: this we reserve until we come to treat of plantations in general, under the title WOODLANDS; for by collecting the more useful trees into one point of view, we shall be better able to judge of their comparative value; and the methods of raising the several species for the purpose of timber (ship-timber excepted) being nearly the same, we shall be enabled to give our directions more fully, yet upon the whole much more concisely, than we could have done, had we retailed them separately under each article: therefore, we mean to abide by the same rule under the present head that we have observed throughout this part of our work; namely, to treat of the plant under consideration merely as a *nursery plant*.—There are various opinions about the *choice of acorns*; authors in general recommend those of “fair, straight, large and shining trees;” but *nurserymen*, we believe, pay little attention as to the tree from which the acorns are gathered. And indeed, when we consider that the seeds of the distinct *varieties* of any individual species of plants produce one and the same seedling-stock, or a similar variety of seedling plants, we must conclude that little attention is due, If however it be true that the seeds of some *varieties* produce

where except in orchards ; but let them be set where they will, they never fail to repay the owner with pleasure and profit.

The *varieties* which are principally eligible for ornamental plantations are, The Cherry Plum-Tree, the Double-blossomed, the Stoneless, the Gold-striped, and the Silver-striped Plum.

The *Cherry Plum-Tree* is always planted among flowering-shrubs, on account of its early flowering. It may be kept down to any height ; and the flowers will be produced in March, in such plenty, and so close, as almost to cover the branches. It is admired by all for the early appearance of its flowers, which are succeeded, after a mild spring, by a round reddish plum, on a long slender footstalk, that has the resemblance of a Cherry. Unless there is little or no frost after these trees have been in blow, it rarely happens that any fruit succeeds the flowers.

The *Double-blossomed Plum-Tree* is another variety. The flowers of this sort are exceedingly double, and the twigs will be richly furnished with them in the month of May. Their petals, like those of the Cherry, are of a pure white, though amongst these some filaments with darkish anthers appear. As soon as the show of flowers is over, we are not to give up all expectations from this tree ; for many of them will be succeeded by fruit, which is of the same colour, shape, and taste, with the common Damascene, though smaller, and is liked by many.

The *Stoneless Plum*. This is a variety that should be admitted on no other account than because the pulp surrounds a kernel, without having any stone. It is a small blue plum ; and those people who have it in possession, take a pleasure in shewing it as a curiosity.

The *two Striped sorts* make a variety by their variegated leaves ; on which account they are frequently sought after by the curious.

9. The *BULLACE-TREE* is sometimes planted in shrubby quarters, for the sake of the fruit ; which by many persons is deemed very agreeable, being possessed of a fine acid. It ought to be pulled and eaten immediately from the tree.

The *varieties* of this species are, The *Black*, the *White*, and the *Red Bullace*.

10. The *SLOE-TREE*. The Sloe-bush is, without all doubt, a species distinct from either Plum or Bullace. And indeed it is such a species, that, were it not for its commonness, it would

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this Oak ; setting forth that Mr. LUCOMBE, a gentleman of Devonshire, having, about the year 1765, sowed a parcel of acorns saved from a tree of his own growth, and observing that one of the seedling plants preserved its leaves through the winter, he paid particular attention to it, and propagated, by grafting, some thousands from it. Its being an evergreen is not the only peculiarity of this variety ; it has a somewhat more upright tendency, and seems to be of a quicker growth, than Oaks in general. The plants however, which we have seen, do not answer altogether the description given in the account abovementioned ; but as they are now in the hands of almost every Nurseryman, we forbear saying any thing further respecting them.

2. The WILLOW-LEAVED OAK will grow to be a large timber-tree. It receives its name from its leaves resembling very much those of the Common Willow. These long narrow leaves have their surface smooth, and their edges entire ; and their acorns will be almost covered with their large cups.

There are several *varieties* of this sort ; some having shorter leaves, others broader, and hollowed on the sides ; some large acorns, others smaller, &c. all of which are included under the appellation of Willow-leaved Oaks.

3. The CHESNUT-LEAVED OAK. This also will grow to be a large timber-tree ; and in North America, where it grows naturally, the wood is of great service to the inhabitants. It is so called, because the leaves greatly resemble those of the Spanish Chestnut-tree. They are about the same size, smooth, and of a fine green colour.

There are two or three *varieties* of this sort ; but the leaves of all prove that they are of the species called the Chestnut-leaved Oak ; so that nothing more need be observed, than that the leaves of some sorts are larger than those of others ; that the acorns also differ in size, and grow like those of our English Oak, on long or short footstalks as it shall happen.

4. The BLACK OAK is a tree of lower growth, it seldom rising to more than thirty feet high. The bark of this tree is of a very dark colour, which occasioned its being named the Black Oak. The leaves are smooth, very large, narrow at their base, but broad at their top, being in shape like a wedge : They have
indentures

indentures at the top, so as to occasion its having an angular look ; they are of a shining green colour, and grow on short footstalks on the branches.

There is a *variety* or two of this sort, particularly one with *trifid leaves*, and another slightly trilobate, called the *Black Oak of the Plains*, the leaves and cups of all which are small.

5. RED OAK. The Red Oak will grow to be a timber-tree of sixty or seventy feet high, and the branches are covered with a very dark-coloured bark. It is called the Red Oak from the colour of its leaves, which in the autumn die to a deep red colour.

There are several *varieties* of this species, the leaves of which differ in size and figure ; but those of the larger sort are finely veined and exceeding large, being often found ten inches long and five or six broad : They are obtusely sinuated, have angles, and are of a fine green colour in the first part of the summer, but afterwards change by degrees to red, which is mark enough to know these trees to be of this species. There are several varieties of this tree, which exhibit a manifest difference in the size of the leaves, acorns, and cups. That is the best which is commonly called the *Virginian Scarlet Oak* ; and the bark is preferred for the tanners use before that of all the other sorts.

6. The WHITE OAK. The White Oak will not grow to the size of the former, it seldom being found higher than forty feet even in Virginia, where it grows naturally. But though the timber is not so large, yet it is more durable, and consequently of greater value for building to the inhabitants of America, than any of the other sorts. The branches of this tree are covered with a whitish bark ; the leaves also are of a light colour. They are pretty large, being about six inches long and four broad. They have several obtuse sinuses and angles, and are placed on short footstalks.

There is a *variety* or two of this species ; and the acorns are like those of our Common Oak.

7. The ITALIAN OAK will grow to about the height of thirty feet. The branches are covered with a dark-purplish bark. The leaves are smooth, and so deeply sinuated as to have some resemblance

resemblance of pinnated leaves ; and each has a very short footstalk. The fruit of this species fits close to the branches. The cups are in some degree prickly and rough, and each contains a long slender acorn, that is eatable. This (says HANBURY) is the true *Phagus* of the Greeks, and the *Esculus* of Pliny ; in the places where these trees grow naturally the acorns are, in times of scarcity, ground into flour, and made into bread.

8. The SPANISH OAK will grow to be as large a tree as our Common Oak, and is no way inferior to it in stateliness and grandeur ; for the branches will be far extended all around, causing, with the leaves, a delightful shade. Though the bark of these branches is of a whitish colour, yet they are nevertheless spotted with brownish spots. The leaves are of an oblong oval figure, but not very long, seldom being longer than three inches, and two broad. They are smooth, and have their edges deeply serrated : These serratures are acute, and chiefly turn backwards. Their upper surface is of a fine light green colour, and their under of an hoary cast ; and with these beautiful leaves each branch is plentifully ornamented all over the tree. The cups are most peculiar and singular ; for they are very large, and composed of several rough, black, large scales, that lap over one another like the scales of a fish. They almost cover the acorn, though they are pretty large, narrow at the bottom, but broader higher, and have their tops flat. The Greeks call the acorns *Velani*, and the tree itself *Velanida*. The acorns are used in dyeing.

9. The AUSTRIAN OAK is of lower growth than the preceding species, it seldom rising to more than forty feet high. The leaves are of two colours ; their upper surface being of a fine green colour, and their under downy. Their figure is oblong ; but they are so indented about the middle as to make them have the resemblance of a lyre. They are wing-pointed, transversely jagged, and stand on slender footstalks on the branches. The cups of this sort also are smaller and prickly, and the acorns also proportionally smaller than those of the preceding species.

All these foreign deciduous sorts may be PROPAGATED from the acorns, which must be procured from the places where the trees naturally grow. They should be sown as soon as possible
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lows : In the month of August the cuttings should be gathered, about a foot and a half in length. They will thrive the better for having a bit of the last year's wood at the end, though without this they will grow exceeding well. The under leaves should be cut off a foot from the thick end of the cuttings, which must all be planted about a foot deep in the ground ; the other half foot, with its leaves, being above it. No distance need be observed in planting these cuttings, which may be set as thick as you please, though the ground for raising them should be sheltered, lest the winds, which are frequently high at this time of the year, or soon after, loosen the plants just when they are going to strike root, if not wholly blow them out. The weather when the cuttings are to be planted should be either rainy or cloudy ; and if no showers should fall in August, the work must be deferred till they do ; for if cuttings are planted in August, when the weather is parching and dry, they will be burnt up, without great care and trouble in shading and watering. Neither is cloudy or rainy weather only to be recommended in planting these cuttings, but a shady situation also, either under a north wall, or in beds which are covered the greatest part of the day with the umbrage of large trees. This shady situation is very necessary for them ; since, though the weather be rainy and cloudy when they are planted, yet should it prove fair afterwards, the sun will soon dry up the moisture at that season, and endanger the plants, if they are not constantly watered and protected with a shade ; which at once shews the expediency of pitching on a spot where such a conveniency is natural. If these cuttings are planted in August, they will have taken root before winter, especially if they have shade, and water in dry weather : but they should remain undisturbed till the spring twelvemonth following, in order to acquire strength to be planted in the nursery. During the summer, they will require no other trouble than watering in dry weather, and being kept clean from weeds ; and by the autumn they will have made a shoot of perhaps a foot or more in length. In the beds, nevertheless, they may remain till the spring, when they should be all carefully taken out, and planted in the nursery, as was directed for the seedlings.

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shall proceed to the next sort, after observing, that the acorns of the Cork-tree are longish, smooth, and brown when ripe, and of the size and shape of some of our common acorns, to which they are so much alike, as not to be distinguished, if mixed together.

The *Narrow-leaved Cork-tree* is a variety only of the common and most general sort; so that as this article requires nothing more than observing that the leaves are smaller, and as such make a variety in plantations, it may not be amiss to say something of the Cork, which we receive from abroad, and which is collected from these trees. The best cork, then, is taken from the oldest trees, the bark on the young trees being too porous for use. They are, nevertheless, barked before they are twenty years old; and this barking is necessary, to make way for a better to succeed; and it is observable, that after every stripping the succeeding bark will encrease in value. They are generally peeled once in ten years, with an instrument for the purpose; and this is so far from injuring the trees, that it is necessary, and contributes to their being healthy; for without it they thrive but slowly; nay, in a few years they will begin to decay, and in less than a century a whole plantation will die of age; whereas those trees that have been regularly peeled will last upwards of two hundred years. "Wonderful, then, is the wisdom and goodness of Almighty God, and calls for our profoundest admiration, that he should not only provide for us his creatures such variety of things for use, but cause, as in this instance, what would be death to one tree, to be refreshment to another, for the supply of our necessities; and in the formation of this tree, not only causing the cork to grow, but providing also an interior bark sufficient to nourish the tree, and even in a manner exhilarate it, as the loaded wool is shorn from the fleecy kind. To make our gardening to the utmost degree useful, we should be always exercised in these considerations, and this will inspire us with acts of gratitude and obedience." HANBURY.

11. The *Ilex* is a well-known Evergreen, of which there are many *varieties*, all of which add great beauty to the large quarters of Evergreen-trees. The bark of all these sorts is entire, and that of the younger sorts smooth; but the leaves are of different

shapes and composition, according to the nature of their variety. Some of them are nearly like those of both sorts of the Cork-tree; others again are nearly round and prickly; some are long, smooth, and narrow, with few indentures; whilst others are broad and much ferrated: All these *varieties* will often proceed from acorns gathered of the same tree; may, the leaves of the same tree will not be always alike, being often found very different on the same plant; so that a quantity of plants of this species raised from seeds, will of themselves afford considerable variety. The acorns of all these sorts are of different sizes, though their shape is nearly the same, which is like that of some sorts of our Common Oak, but smaller. The most striking *variety* of the *Ilex* is the *Holly-leaved Oak*, which differs from the other sorts only that the leaves are shaped like those of the Holly-tree. They are of an oblong, oval figure, sinuated, prickly, and downy underneath; but many sorts raised from seeds of the *Ilex* will have such kind of leaves; and it constitutes no further a *variety*, than what may reasonably be expected from a quantity of the acorns of the *Ilex* sown.

12. KERMES OAK. This is a low-growing tree, and a fine Evergreen: It seldom grows to be twenty feet high, and it may be kept down to what height is required. It has the appearance of some of the sorts of the *Ilex*, from which it looks to be a variety only, though doubtless this is of itself a distinct species. The leaves are smooth, and of an oval figure. They are of a thickish consistence, and larger than most sorts of the *Ilex*. Their verge is indented, and many of them are possessed of small spines; and they are placed on short strong footstalks on the branches. The acorns of this sort are small, though there are to be found in our woods acorns of about the same size and shape.

MILLAR says, "this is the Oak from which the Kermes or Scarlet Grain is collected, which is an insect that harbours on this tree."

13. The LIVE OAK is common in America, where it grows to timber. The leaves are large, spear-shaped, oval, of a fine dark-green colour, entire, and placed on short footstalks on the branches. The acorns of this sort are small, though they grow in cups with footstalks like the other sorts. The wood of this tree,

tree is very useful to the inhabitants of Carolina, Pennsylvania, and Virginia, where it grows naturally, being very tough and hard, and serves for many purposes that require such a sort. The acorns serve for food for the meanest people, who not only eat them as such, but, being of a very sweet nature, they are liked by persons of all ranks. From these acorns a sweet oil also is extracted, which is very good.

There are many other *varieties* of the different species of Evergreen Oaks, which it will not be so necessary to search for here, as the sorts mentioned are the bulk of the tribe, and of themselves afford much variety; and indeed, if much cost and trouble were bestowed in procuring others, the variety would be little heightened, particularly as the pleasure received from the variation arises principally from the different forms of the leaves; for none of these trees produce flowers for ornament, and the acorns afford too minute a variety to require dwelling long on here.

All the species of EVERGREEN OAKS are to be raised from *acorns*, in the manner which has been directed for the foreign deciduous sorts. The best acorns we receive from abroad; for they seldom ripen well with us.—The acorns which come from abroad, and which are by far the finest, often sprout in the passage; so that care must be used in taking them out of what they are enclosed in, and they should be put into the mould as soon as convenience will permit. Traps for mice, &c. must be set; and after they come up, they will want nothing but weeding for at least three years; for I would not have them taken out of the seed-beds sooner; especially the sorts of the *Ilex*; for when these have been pricked out of the seed-beds at one year old, they have seldom grown; and though sometimes some of them will be green, and have the appearance of growing, during one summer, they will oftenest turn brown, and gradually go off afterwards. “After these plants have stood to be two or three feet high, I always found them more sure of growing when moved. I have transplanted such plants at most times of the year with success; in the spring, in the depth of winter, and in the autumn, and have had them grow well when moved in July; and indeed I am pretty well persuaded there is no

month in the year more proper than that for the removing of most sorts of Evergreens, provided the weather be rainy or hazy at their planting, and shade can be afforded them for some time after." HANBURY.

These trees may be also encreased by *inarching*, for they will grow very readily this way on stocks of our Common Oak; so that having a tree or two of any of the sorts, if young Oaks are planted round each of them, after they have grown a summer or two, they will be ready to embrace the young shoot. After they are well joined, they may be cut off from the mother tree, and transplanted into the nursery-ground, or where they are to remain, and fresh Oaklings planted round the trees to be multiplied; and the continuance of the repetition of this may be at pleasure. In removing of the inarched plants, the time should be observed as in removing young plants of our Common Oak, the roots still remaining of that kind and nature.

These trees will take by *grafting* on the young stocks of our Common Oak. The stocks should be young and healthy, the cuttings strong and good, and great care must be taken in properly joining and claying them, or they will not grow; which makes the inarching more necessary, as by that practice no cutting is in danger of being lost.

R H A M N U S.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female: There are twenty-seven SPECIES; seven of which may be admitted into our collection.

1. RHAMNUS *Catharticus*: The COMMON BUCKTHORN; a tall deciduous shrub; native of England, and (one of its varieties) of Spain, Italy and France.

2. RHAMNUS *Frangula*: The FRANGULA, or the BERRY-BEARING ALDER; a deciduous shrub; native of England and most of the northern parts of Europe.

3. RHAMNUS

3. *RHAMNUS Alpinus*: The ALPINE RHAMNUS, or the ROUGH-LEAVED FRANGULA; a *deciduous shrub*; native of the Alps.

4. *RHAMNUS Paliurus*: The PALIURUS, or THORN OF CHRIST, or CHRISTI THORN; a *deciduous shrub or tree*; native of Palestine, also of Spain, Portugal and Italy.

5. *RHAMNUS Alaternus*: The COMMON ALATERNUS; an *evergreen tree*; native of the South of Europe.

6. *RHAMNUS infectorius*: The NARROW-LEAVED EVERGREEN BUCKTHORN; an *evergreen shrub or tree*; native of Spain.

7. *RHAMNUS Oleoides*: The OLIVE-LEAVED EVERGREEN BUCKTHORN; an *evergreen shrub*; native of Spain.

1. The COMMON BUCKTHORN. Of this species there are the following *varieties*: Dwarf Buckthorn, Long-leaved Dwarf Buckthorn, and the Common Buckthorn of our hedges. Variety is the sole motive for admitting these sorts into a collection. The flowers have no beauty to catch the attention; though their berries, their manner of growing, the colour of their bark in winter, and verdure of their leaves in summer, court us to admit a few of them.

Dwarf Buckthorn is a shrub of about a yard high. The branches grow irregular, and are covered with a blackish-coloured bark. The leaves are nearly oval, though they end in a point. They are scarcely an inch long, about half that breadth, and stand opposite by pairs for the most part. The flowers grow on short footstalks, on spurs, by the sides of the branches. They are of a greenish colour, and make little show.

Long-leaved Dwarf Buckthorn differs little from the other, only that it grows to be rather a larger shrub, and the leaves are longer. The flowers are about the same colour as the Dwarf sort; but neither of these scarcely ever produce berries: This makes them much less valuable than our Common Buckthorn, which will exhibit its black berries in plenty in the autumn, either for show or use.

Common Buckthorn is well known in England. Where it does not grow common about a habitation, a few of these shrubs should be admitted; for it is a well-looking tree, either

in winter or summer, and its black berries in the autumn are no small ornament. The Common Buckthorn will grow to be near sixteen feet high, and will send forth numerous branches on all sides. These are smooth; and the bark is of a blueish colour. Many strong sharp spines come out from the sides and ends of the branches. The leaves are oval, spear-shaped, about two inches long, and one broad. Their under surface is of a lighter green than the upper. They have serrated edges, and stand, sometimes by pairs, sometimes singly, on longish footstalks on the branches. The flowers are produced in clusters from the sides of the branches, in June. Their colour is green: and they are succeeded by black berries, each containing four seeds. Syrup of Buckthorn is made of these berries, and is well known as a cathartic. From the juice of these berries also an admirable green colour is prepared, which is in great request with miniature-painters.

All the sorts of Buckthorn are easily PROPAGATED, either by seeds or cuttings. The seeds of the Purging Buckthorn may be gathered in plenty in most parts of England; but the seeds of the Dwarf sorts must be procured from abroad, where they grow naturally, for they produce no seeds with us. They should be sown as soon as possible after they are ripe, in almost any kind of garden-mould made fine. They will not always come up the first spring; so that the beds must remain undisturbed and weeded during the summer. After they are come up, and have stood in the seed-bed a year or two, they may be planted out in the nursery-way, at small distances. These plants are also to be raised by cuttings, which should be planted in the autumn; and if they are not planted very close, they will want no removing until they are finally set out. If a large quantity of these plants is wanted, and little ground is prepared for the cuttings, they may be set very close, and in the winter following taken up, and planted in the nursery-way, like the seedlings. In two or three years, they may be planted out to stand.

2. FRANGULA, or BERRY-BEARING ALDER. This species affords us the following varieties: Common Black-berry-bearing Alder, Dwarf Berry-bearing Alder, and the American Smooth-leaved Berry-bearing Alder.

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The *Common Black-berry-bearing Alder* will grow to the height of about ten feet. It will aspire with an upright stem, and produce numerous branches on all sides. The bark is smooth, of a blueish colour, and is all over spotted with white spots, which make it resemble a blueish-grey. The leaves are oval, spear-shaped, and grow irregularly on the branches. They are about two inches long and one broad. Their upper surface is smooth and of a shining green, and their under surface is possessed of many strong veins that run from the mid-rib to the edges. The flowers are produced in bunches in June, each having a separate footstalk. They are of a greenish colour, and make no show; but they are succeeded by berries, which are first red, afterwards (when ripe) black, and are a great ornament to the tree.

Dwarf Berry-bearing Alder is of very low growth. It seldom rises higher than two feet. The branches are of a blueish-brown, and the leaves are nearly round. They are placed on short footstalks, and many strong veins run from the mid-rib to the border. It makes no show, either in the flowers or fruit; the first being small, and the latter rarely happening.

American Smooth-leaved Berry-bearing Alder will arrive at the height of our common sort; and hardly in any respect differs from it, either in leaves, flowers, or fruit.

3. **ROUGH-LEAVED ALPINE FRANGULA**, or *Berry-bearing Alder*, differs in no respect also from the common sort, only that it is unarmed with thorns, will grow to be rather taller, and the leaves are tough, larger, and doubly lacinated.

There is a *variety* of this species, with smooth leaves and of rather lower growth, called the *Smooth-leaved Alpine Frangula*.

The method of PROPAGATING these sorts of the *Berry-bearing Alder* is exactly the same as that laid down for the *Buckthorn*; and if those rules are observed, any desired quantity may be raised.

4. **PALURUS**, or *Christi Thorn*. The **PALURUS** will grow to be a tree of near fourteen feet high, and may be trained to an upright stem, which will send forth numerous slender branches on all sides. These are armed with sharp thorns,

two of which are at each joint. One of these thorns is about half an inch long, straight and upright; the other is scarcely half that length, and bent backward. Between these is the bud for the next year's shoot. The bark on these twigs is smooth, and of a purplish colour, and the spines themselves are of a reddish cast. The joints alternately go in and out, forming at each bud an obtuse angle. The leaves are nearly of an oval figure, of a pale-green colour, and stand on very short footstalks. They are small, being scarcely an inch in length, have three longitudinal veins, and are placed alternately on the branches. The flowers are produced in clusters from the sides of the young shoots. They are of a yellow colour; and though each single flower is small, yet they will be produced in such plenty all over the plant, that they may make a very good show. June is the time of flowering; and they are succeeded by a small fruit, that is surrounded by a membrane.

The plant under consideration, says HANBURY, "is undoubtedly the sort of which the crown of thorns for Our Blessed Saviour was composed. The branches are very pliant, and the spines of it are at every joint strong and sharp. It grows naturally about Jerusalem, as well as in many parts of Judæa; and there is no doubt that the barbarous Jews would make choice of it for their cruel purpose. But what farther confirms the truth of these thorns being then used, are the antient pictures of Our Blessed Saviour's crucifixion. The thorns of the crown on his head exactly answer to those of this tree; and there is great reason to suppose these were taken from the earliest paintings of the Lord of Life; and even now our modern painters copy from them, and represent the crown as composed of these thorns. These plants, therefore, should principally have a share in those parts of the plantation that are more peculiarly designed for religious retirement; for they will prove excellent monitors, and conduce to due reflection on and gratitude to *Him who bath loved us, and has washed us from our sins,*" &c.

These deciduous sorts may be PROPAGATED by seeds and layers. The soil for the seed should be that taken from a fresh pasture, with the sward; and having lain a year to rot, and been turned three or four times, to this a fourth part of drift sand should be added; the whole being well mixed, the seeds
should

should be sown half an inch deep. They rarely come up before the spring twelve-month after sowing; so that the beds must be undisturbed all the summer, and kept free from weeds. After the plants are come up, they may stand a year or two in the seed-bed, and be then planted out in the nursery, at the usual distance: In about three years they will be fit to be finally planted out. These plants may also be propagated by layers; but this is not always a very easy task, and it is seldom that plants can be obtained under two years. Nicking them like carnations is a very uncertain method to be practised on these twigs: for the end of the nick where the root is expected to strike will swell, and be covered with a close watery substance, without sending out any fibres; and the branch growing in the ground will in two or three years grow this out, and thus all hopes of a root will be lost. By twisting them, also, is an uncertain method (though many plants may be raised this way); for if the twisting be too great, you kill the twig designed for the layer; and if it is too little, you may look at the end of two or three years, and find no roots at your layers. However, by a gentle twist, just breaking the bark, plants may be raised. HANBURY continues, "Finding these methods precarious and uncertain, I had recourse to another, by which I obtained numbers of plants. With a sharp knife I made a gentle nick or two the depth of the bark, about the bud and thorns which are at a joint. Having done this in two or three places in every shoot, and having laid them in the ground, every twig had struck root, and were become good plants by that time two years; many of which were fit to plant out for good, and the smaller proper for the nursery-ground to gain strength."

5. The ALATERNUS. The *varieties* of this Species are:

The Common Alaternus,

The Broad-leaved Alaternus,

The Jagged-leaved Alaternus.

The *Common Alaternus* is again *variegated*: There are of it, the Gold-striped, the Silver-striped, the Blotch-leaved, the large and the smaller growing *Alaternus*; and whoever is for having them in plantations of the present kind, will still encrease the variety. This is indeed objected to by some, as, they say, they cannot be Evergreens; others again think they are most proper, as they retain their leaves, and appear amongst others, of different

ferent colours, like flowers in summer. The branches of these sorts of *Alaternus* are numerous ; and the younger branches are covered with a smooth green bark. In winter, indeed, they will be brown, and some of a reddish colour ; others will have their sides next the sun red, and the opposite green. The leaves are oval, of a lucid green in the common sorts, and look very beautiful. Their edges are crenated, and they grow alternately on the branches. The flowers are produced in April, from the wings of the leaves, in little clusters : They are of a greenish colour, but make no show ; and are succeeded by berries, which are very grateful to blackbirds, thrushes, and the like kinds of birds.

The *Broad-leaved Alaternus* is the grandest looking tree of all the sorts : It will grow to the greatest height, if permitted to shoot freely, though it may be kept down to any height wanted. The leaves are the longest of any of the sorts, and their edges are lightly crenated. They differ a little in figure from the preceding sort, being more heart-shaped. They are of a fine shining strong green colour, both in winter and summer ; and this tree produces flowers and seeds like the other.

The *Jagged-leaved Alaternus* has as different a look from the other as any two Evergreens whatever. It is a well-looking upright tree, and the branches are covered with a smooth fine bark, which in winter is of a reddish colour. The leaves, like those of all the sorts, grow alternately. They are long and narrow, and are so jagged as to cause them to have a particular look. Their surface is smooth and shining, and their figure lanceolate ; and this, together with the nature of their ferratures, causes in the tree a beautiful as well as singular look. The flowers are produced in the same manner as the others ; and are succeeded by berries, which are used by painters in composing some of their yellows. There are variegated sorts of the Jagged-leaved *Alaternus* in both silver and gold stripes, which are indeed very beautiful ; but they are very apt to turn green, if planted in a rich soil ; so that to continue the stripes in perfection, the worst sort of hungry land should be allotted them.

There are more varieties of the *Alaternus*, but their differences are so inconsiderable as scarcely to be worth enumerating. All the sorts have been confounded by the unskilful with those of *Phillyrea*, which have indiscriminately passed one for the other :

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That the Gardener, therefore, may be guarded from running again into these errors, he must observe, that the leaves of all the sorts of *Pbillyrea* grow always opposite by pairs, whereas those of the *Alaternus* grow singly and alternately on the branches, which first gave occasion to the shrub's being so called. The Botanist will see a more material difference, when, upon examining the flowers, he finds they belong to distinct classes.

6. The NARROW-LEAVED BUCKTHORN grows to be a tree of ten or twelve feet high, sending forth several branches from the sides from the bottom to the top. They are covered with a blackish or dark-coloured bark, and each of them is terminated by a long sharp thorn. The leaves are very narrow, fleshy, astringent, of a strong green colour, and grow together in bunches on the sides of the branches. The flowers come out from the sides of the branches in small bunches: They are of an herbaceous colour, appear early in the spring, and are succeeded by large round berries, like those of the Sloe-bush, which are harsh and sour to the taste, and of a fine black colour when ripe. The fruit of this sort continues on the trees all winter, making a beautiful appearance among the narrow clustered leaves at that season.

7. OLIVE-LEAVED BUCKTHORN will grow to be eight or ten feet high, sending forth numerous branches, each of which is terminated by a long sharp spine. The leaves are small, oblong, obtuse, undivided, veined, smooth, of a thickish consistence, and grow two or three together on their own separate footstalks. The flowers come out from the sides of the branches in the spring. They are small, of a whitish green colour; and are succeeded by round black berries, about the size and colour of those of the Common Purging Buckthorn.

These Evergreen sorts are to be PROPAGATED, 1. By layers. This business must be done in the autumn, when the last summer's shoots should be laid in the ground. These will often strike root at almost every joint; though they have been found in some strong soils, upon examining them in the autumn, after being layered a whole year, without any roots; so that it would be proper to give the layer a slit at the joint, and bend it so in the ground as to keep it open; and it will have plenty of root by the autumn. Another thing to be observed is, that in order

to obtain good layers, the plants designed to be encreased should be headed the year before, and this will cause them to shoot vigorously ; and from these shoots the strongest and best layers may be expected ; many of which will be good plants, to set out where they are to remain, while the weakest may be planted in the usual nursery-way, to gain strength. 2. These plants may be raised by seeds, the variegated ones excepted, for they must always be encreased by layers. The seeds will be ripe in September, or the beginning of October, when they should be guarded from the birds, or they will soon eat them all. Soon after they are ripe they should be sown, for even then they will often remain two years before they come up. The beds should be composed of fine light mould, and they should be sown an inch deep. If few or no plants appear in the spring, you must wait, and weed the beds with patience, until the spring following, when you may expect a plentiful crop. Let them stand two years in the seed-bed, with constant weeding, and frequent watering in dry weather ; and in March let them be planted out in the nursery, where they will be afterwards ready for removing when wanted. As these trees produce plenty of good seeds, by this means a prodigious quantity of plants may be soon raised ; and those from seeds are always observed to grow straighter, and to a greater height than those raised from layers ; so that where many of these trees are wanted for large plantations, the raising them from seeds is the most eligible method. .

All the sorts of *Alaternus* are very hardy, and may be planted in almost any soil or situation ; but the Narrow and Olive-leaved Buckthorn should be stationed in a dry, warm, well-sheltered place.

R H O D O D E N D R O N.

LINNEAN Class and Order, *Decandria Monogynia* : Each flower contains ten males and one female ; There are seven SPECIES : six of which are here treated of :

I. RHO-

1. **RHODODENDRON *Ferrugineum*** : The FERRUGINEOUS DWARF ROSE-BAY ; a low deciduous shrub ; native of the Alps, Apeninnes, and other mountains of Europe.

2. **RHODODENDRON *Hirsutum*** : The HAIRY DWARF ROSE-BAY ; a low deciduous shrub ; native of the Alps and many mountains of Switzerland and Austria.

3. **RHODODENDRON *Chamæcisus*** : The CHAMÆCISTUS, or CILIATED-LEAVED DWARF ROSE-BAY ; a low deciduous shrub ; native of Mount Baldus, and near Saltzburg in Germany.

4. **RHODODENDRON *Dauricum*** : The DAURIAN DWARF ROSE-BAY ; a low deciduous shrub ; native of Dauria.

5. **RHODODENDRON *Maximum*** : The AMERICAN MOUNTAIN LAUREL ; an evergreen shrub ; native of Virginia.

6. **RHODODENDRON *Ponticum*** : The PONTIC DWARF ROSE-BAY ; an evergreen shrub ; native of the East, and of most shady places near Gibraltar.

1. The FERRUGINEOUS DWARF ROSE-BAY is a shrub of about two or three feet in growth. The branches are numerous, irregular, and covered with a dark-brown bark, having a tinge of purple. The leaves are of two very different colours ; the upper surface is of a fine green, but the under is of an iron colour. There will be numbers of these on every twig ; and they grow in a pleasing irregular manner : They are of a lanceolated figure, have their surfaces smooth, and are little more than an inch long. Their edges are reflexed ; but they have no serratures, and, on the whole, constitute a great beauty when in leaf only. The flowers grow at the ends of the branches, in round bunches. Their petals are funnel-shaped, of a pale rose colour, appear in June, and are rarely succeeded by seeds in England.

2. HAIRY DWARF ROSE-BAY is a shrub of about the same, or rather of a lower growth. The branches of this species also are numerous, and the bark with which they are covered is of a lightish brown colour. They are ornamented with plenty of leaves, in an irregular manner. They are not so large as those of the former sort ; but are of the same figure, only a little more inclined to an oval. They sit close to the branches, and have no serratures, but hairs on their edges like the eye-lashes. Their under surface also is possessed of the same sort of hairs, which
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are all of an iron colour. The flowers will be produced at the ends of the branches, in bunches, in May. These are also funnel-shaped, of a light-red colour, make a good show, and are succeeded by oval capsules, containing ripe seeds, in August.

3. *CHAMÆCISTUS*, or *CILIATED DWARF ROSE-BAY*, will grow to be about a yard high. The branches are numerous, produced irregularly, and covered with a purplish bark. The leaves are produced in great plenty, and without order, on the branches. They are oval, spear-shaped, small, and their under surface is of the colour of iron. The edges also are possessed of many iron-coloured hairs, which are placed like those on the eyelids. The flowers are produced at the ends of the branches, in bunches. They are of a wheel-shaped figure, pretty large, of a fine crimson colour, and make a handsome show. They appear in June, and are succeeded by oval capsules, containing ripe seeds, in September.

4. *DAURIAN DWARF ROSE-BAY* is a low shrub, sending forth many branches covered with a brownish bark. The leaves are broad, naked, smooth, and come out without order on short footstalks. The flowers are wheel-shaped, large, and of a beautiful rose colour: They appear in May; and are succeeded by oval capsules full of seeds, which do not always ripen in England.

All these deciduous sorts are PROPAGATED best by the seeds, and as they grow naturally on the Alps, Apennines, and other snowy and cold mountains, and are seldom made to grow and flourish fair in gardens, it will be the best way for a Gentleman who has extended his plantation, and has any part of it mountainous, hilly, or rocky, on the north side, to get some spots well cleared of all roots and weeds; and these being made fit and level, let the seeds be sown therein. They will want no covering; a gentle patting down with the spade will be sufficient; for the seeds are so exceeding small, that they will be washed into the ground deep enough by the first shower of rain that follows. Whoever is not content with sowing seeds, and covering them no more than what they will get by being patted down, must only lightly dust some earth over them; for if they are covered half an inch, the general depth for most seeds, you must expect no crop. After the young plants come

up,

up, they must be watered in dry weather, weeded, and in the winter protected from the frosts, which will destroy them. And here one thing is to be observed, that though the north side, at the foot of or on a hill, is thought most proper for their growth, as being most suitable to their nature, yet a place must be chosen for them that has trees and hedges to shelter them from the northern black frosts; for these trees, hardy as they are, will be liable to be destroyed by them, for want of snow, as in other places, to cover them and keep them warm in the winter season. After these plants are come up, they should be thinned; and leaving only a proper number in each respective place, and being protected for the first two or three winters, either by mats or hand-glasses, in the severest weather, they will be afterwards strong enough to be left to themselves, especially if the places are tolerably sheltered. If a gardener has no other ground than his seminary for raising plants, his best method will be to prepare a compost for these seeds in the following manner: Take four bushels of earth from some neighbouring hill, which if rocky, that nearest the surface, on which the sheep have been used to lie and dung, will be the best; but if it be of any other nature, the mould nearest the surface, mixed with the following, will do very well: Take six bushels of maiden earth, from a rich loamy pasture, that has been dug up with the sword, and by frequent turning is well rotted and mixed, and four bushels of drift or sea-sand. Let these be well mixed together, and of this let the bed be made. The bed being made level and fine, the seeds sown, and gently patted down with the spade, or at farthest no other covering than being gently dusted over with the finest mould, may be left to nature. This bed should be in a shady well-sheltered place; and the plants after they are come up should be weeded and watered in the summer, and protected from frosts by mats in the winter. In the spring they may be pricked out in beds in the nursery-ground, at a very small distance, that they may be hooped and matted if the following winter should prove very severe. The second winter they will require no other trouble than pricking furze-bushes round the bed for their defence; and after that they may be set out to stand.

5. The AMERICAN MOUNTAIN LAUREL is a plant so distinguished because, in America, it grows naturally upon the highest

highest mountains, and on the edges of cliffs, précipices, &c. There it will grow to be a moderate-sized tree; with us it seldom rises higher than six feet. The branches are not numerous, neither are they produced in any order. The leaves are large and beautiful, of an oval spear-shaped figure, and a little resemble those of our Common Laurel. They are of a shining strong green on their upper surface, though paler underneath; but they lose this delicacy as they grow older, altering to a kind of iron-colour. Their edges are acutely reflexed, and they grow irregularly on short footstalks on the branches. The flowers are produced at the ends of the branches about Midsummer, though sometimes sooner; before which time the buds will be large and turgid; and indeed, as they begin to swell early in the autumn before, these have a good effect, and look well all winter. When the shrub is in blow, the flowers appear close to the branches, in roundish bunches. Each is composed of one petal, which is divided at the rim into five parts, one of which is dotted in a pretty manner. They are very beautiful, and alter their colour as they grow older; for at first the petal is of a very pale blush colour, which dies away to a white; but the outside, which is a peach colour, is not subject in so high a degree to this alteration. They will continue, by succession, sometimes more than two months; and are succeeded by oval capsules, full of seeds.

6. **PONTIC ROSE-BAY** grows to about four or five feet high, sending forth several branches without order from the sides. The leaves are spear-shaped, glossy on both sides, acute, and placed on short footstalks on the branches. The flowers are produced in clusters from the ends of the branches; each of them is bell-shaped, and of a fine purple colour. They appear in July; and are succeeded by oval capsules containing the seeds, which seldom ripen in England.

THE PROPAGATION of these Evergreen sorts must be from seeds, which we receive from the places where they grow naturally. The best way is to sow them very thin in the places where they are designed to remain; and if these places be naturally rocky, sandy, and shady, it will be so much the better (especially for the first sort; the second requires a moistish soil, in a warm shady place); if not, a quantity of drift-sand must be added to the natural soil, and all made fine and level. Some spots for
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the reception of the seeds are to be pitched on. A few seeds should be put in each, and covered about half an inch deep, and then some sticks stuck round them to direct to the true places, that they may not be disturbed by hoeing the weeds, but that these may be all carefully plucked up by the hand as often as they appear; for it will be a whole year, and sometimes two or more, before the plants come up. This careful weeding must always be repeated; and after the plants come up, those that grow too close may be drawn the spring following, and each set in a separate pot, and then plunged into a hotbed, to set them growing. The plants that remain without removing will be the strongest and best, and will be more likely to produce flowers than any other; though this seems to be a plant that will bear transplanting very well, especially if it is not to be carried at too great a distance for the roots to dry, and a ball of earth be preserved to them. Whenever they are not to be raised and remain in the places, the best way is to sow them in pots filled with sandy earth, or such as is made so by at least a third part of sand being added. After the plants come up, they may be planted in separate pots the spring following, and then set forward by a plunge in the bed; and afterwards they may be any time turned out into the places where they are to remain, which ought to be in a naturally sandy situation, otherwise there will be little hopes of seeing them in any degree of perfection,

R H U S.

LINNEAN Class and Order, *Pentandria Trigynia*: Each flower contains five males and three females. There are twenty-four SPECIES; eight of which are sufficiently hardy to stand this climate.

1. *Rhus Coriaria*: The TANNER'S SUMACH, or the ELM-LEAVED SUMACH; a tall deciduous shrub; native of Turkey, Palestine, Syria, Italy and Spain.

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2. *Rhus*

2. *Rhus Typhinum* : The VIRGINIA SUMACH ; a *deciduous shrub* ; native of Virginia.

3. *Rhus Glabrum* : The SMOOTH SUMACH ; a *tall deciduous shrub* ; native of North-America.

4. *Rhus Copallinum* : The LENTISCUS-LEAVED SUMACH ; a *deciduous shrub* ; native of North-America.

5. *Rhus Vernix* : The VARNISH TREE, or POISON ASH TREE ; a *deciduous shrub* ; native of North-America, also of Japan.

6. *Rhus Toxicodendron* : The TOXICODENDRON, or POISON OAK ; a *low deciduous shrub* ; native of North-America.

7. *Rhus Radicans* : The RADICANT TOXICODENDRON ; a *deciduous shrub* ; native of Virginia and Canada.

8. *Rhus Cotinus* : The VENETIAN SUMACH, or COCCYGRIA ; a *deciduous shrub* ; native of Italy, Spain, and many parts of Europe.

1. The TANNER'S SUMACH will grow to be about twelve feet high ; and the branches are covered with a brownish hairy bark. It is said that this bark is equal to that of the English Oak for tanning of leather, and that the leather from Turkey is chiefly tanned with it. The leaves of this shrub, which are placed alternately on the branches, have a grand look. They are pinnated, and each ends with an odd foliole. The midrib of each is garnished with about eight pairs of folioles, which all terminate with an odd one. The folioles of which the compound leaf is composed are oval, and not large, being scarcely two inches long, and three-fourths of an inch broad ; but the whole leaf makes a fine show. Their colour is a light-green ; their under surface is hairy, and they are sawed at their edges. The flowers, which are produced in large bunches at the ends of the branches, are of a whitish colour, with a tinge of green. Each is composed of many spikes, on which the flowers sit close. They come out in July ; but are not succeeded by ripe seeds in England, like some of the subsequent sorts. The leaves and seeds are possessed of many excellent virtues.

2. VIRGINIA SUMACH. Of this species there are several varieties ; such as, the Common Stag's Horn, Large Virginian, and Dwarf Sumach.

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The *Stag's Horn Sumach* is so called from the younger branches much resembling a stag's horn, called the Velvet Horn. It will grow to be about ten feet high, and the older branches are covered with a smooth brownish bark, in some places of a greyish colour, whilst the younger ones are covered with a hairy down, which much resembles the velvet horn of a stag. The leaves have a noble look ; for they are large and pinnated. The folioles are oblong, and larger than those of the preceding sort : about seven pairs are stationed along the mid-rib, which are terminated by an odd one. Their under surface is hairy, and they die to a purplish scarlet in the autumn. The flowers are produced in June, at the ends of the branches : they will be in large tufts, but make no show ; though some admire them when succeeded by seeds in the autumn ; for at the end of that season, even after the leaves are fallen, there will be large tufts of seeds, of a scarlet colour, left at the ends of the branches, which have an uncommon appearance.

The *Large Virginian Sumach* differs in no respect from the preceding species, only that it shoots stronger, and grows to be larger, even sixteen or eighteen feet high, and is a more regular tree. The young shoots also are of a more reddish colour ; and though possessed of the like hairy down, on the whole do not so much resemble those of the velvet stag's horn as the other.

Dwarf Sumach differs in no respect from the Common Stag's Horn, except that it is of a very low growth, seldom rising higher than three feet.

3. **SMOOTH SUMACH.** This includes many notable *varieties*, commonly called New-England, Smooth Carolina, and Canada Sumach.

New England-Sumach will grow to about sixteen feet high, sending forth many strong shoots from the root and the sides, covered with a smooth downy bark. The radical shoots will often be near an inch in diameter in one summer's growth. The young branches also from the sides will be large : they are smooth, though a little downy in the summer ; and the bark in the winter is of a light-brown colour. The leaves of this sort are the largest of any, being composed of ten or

more pairs of folioles, proportionally large, and which are terminated by an odd one. The flowers are produced at the ends of the branches, in large loose panicles : They are of a greenish-yellow colour, and come out in June, but are not succeeded by seeds with us.

The *Carolina Sumach* seldom rises to more than ten feet high. The branches are smooth, of a fine purplish colour, and dusted over with a whitish powder. The leaves are pinnated like the other, and the flowers are produced in panicles at the ends of the branches. They are of a fine scarlet colour, appear in July, and are succeeded by bunches of seeds, which in autumn are of a very beautiful red, though they never ripen in England.

The *Canada Sumach* grows to about ten feet in height, and the branches, which are smooth and of a purplish colour, are dusted over, like the former, with a kind of whitish powder. The leaves are pinnated like the other, and the folioles are on both sides smooth ; but their surfaces are of two colours, the upper being of a shining green, whilst the under is hoary. The flowers are red, and produced in July, in large panicles, at the ends of the branches. They appear as if a whitish powder had been dusted in among them, which attracts notice ; but their seeds do not ripen in England.

4. LENTISCUS-LEAVED SUMACH. The chief varieties of this species are, the True Lentiscus-leaved, and the Canada Lentiscus-leaved Sumach.

The *True Lentiscus-leaved Sumach* seldom rises to more than four feet in height, and the branches are covered with a smooth brown bark. The leaves also are pinnated, and are the most beautiful of all the sorts ; for the folioles, though small, are of a shining green. There are about four or five pairs on the mid-rib, which are beautifully arranged, having a membrane or wing on each side running from pair to pair : they are terminated by an odd one, resemble in appearance those of the Lentiscus, and are the greatest ornaments of this shrub. The flowers are produced in July, at the ends of the branches. They are of a greenish colour ; and though produced in large loose panicles, make no great figure ; neither do the seeds ripen with us.

Canada

Canada Lentiscus-leaved Sumach grows to be ten feet high. The leaves have chiefly the properties of the former, but are larger, less delicate, and dusted or pounced over with a whitish matter. The flowers are produced in the same manner as the other: they are greenish, and succeeded by seeds in England.

5. The POISON-ASH. This is called the Poison-Tree because it abounds with a milky poisonous juice, and is distinguished by the title Poison-Ash, because the leaves somewhat resemble those of the Ash-tree. It is called also by some the Varnish-tree, being the shrub from which the true varnish is collected. The Poison-Ash, with us, will grow to the height of about eight feet; and the branches, which are not very numerous, are covered with a smooth light-brown bark, tinged with red. The leaves are pinnated, and the folioles of which each is composed consist of about three or four pairs, with an odd one. These are of an oblong pointed figure, of a fine green colour, and have their edges entire. In the autumn, they die to a red or purple colour, and at that time their leaves, just before they fall, make a charming appearance, some being red, others purple, others between both; the colours of the footstalks and mid-ribs will also be various, thereby in the same tree affording a variety of shades. The flowers are small, and make no show: they are whitish, and produced in May, from the wings of the branches. There will be male and female flowers on different plants; and the females are succeeded by small roundish fruit, which seldom ripens in England.

6. The POISON-OAK is a lower shrub, seldom growing to be more than four feet high. The branches are smooth, and of a light-brown colour. It will cost the gardener some trouble to keep these plants properly, as upright shrubs; for they will send out shoots from the bottom, which will naturally trail on the ground, and strike root. But these must be constantly taken off; for were they to be neglected a few years, a single plant would have spread itself to such a distance as to occupy a great space of ground, in a manner not becoming a well-ordered shrubbery or wilderness. The leaves of this shrub are trifoliate. Each foliole has a short pedicle to itself, and the common footstalk of the whole three is very long. They are

of a shining green, smooth, and have their edges sometimes sinuated, though generally entire. They are roundish, angular, large, and on the whole make a good show. The flowers are of a whitish colour, are produced from the sides of the branches, in July, and are succeeded by cream-coloured berries, which growing in the autumn, and even in the winter, after the leaves are fallen, in a kind of panicles, are by many taken notice of.

There are several *varieties* of this species; some with hairy leaves, some with leaves very downy, others of fine upright growth. In other respects their difference is inconsiderable.

7. RADICANT TOXICODENDRON. Of this species there are several *varieties*; some of which are of upright growth, though the stalks of all have, more or less, a tendency to lie on the ground, and strike root at the joints. The leaves of all the sorts are trifoliate, of an oval figure, smooth, and entire. The flowers are greenish, appear in June and July, and are succeeded by roundish yellow berries, which rarely ripen in England.

8. THE VENETIAN SUMACH is a shrub of about ten feet growth, and has many valuable properties to recommend it. The bark on the older branches is of a light-brown colour, whilst that on the young shoots is smooth, and of a purple hue. The leaves are nearly of an oval figure, and stand singly upon long footstalks on the branches. From these the tree receives great beauty: they are of a delightful green, are smooth, and when bruised emit a strong scent, which by many is thought very grateful; and on that account only makes this shrub desirable. The flowers are produced at the ends of the branches, in July, in a singular manner: The end of the last year's shoot about that time will divide itself, and produce hair-like bunches of purplish flowers, so as to cover the tree; and in the autumn, though they do not perfect their seeds with us, these tufts will still remain, be of a darker colour, and almost cover it; on account of which singular oddness this shrub is valued by some persons. The bark is used by the tanners; whilst the wood and leaves are sought after by the dyers; the former being said to dye a yellow, and the latter, together with the young branches, to dye a good black.

The PROPAGATION of the Sumach is not very difficult; for the second, third, and fourth sorts, with their *varieties*, produce suckers

suckers in such plenty as to over-run, if not taken off, all that is near them. These suckers when taken up will be each a good plant; nay, their very roots will grow; and though they be thrown upon a bed and dug carelessly in, even then many young plants will spring from them.

The POISON-OAK and RADICANT TOXICODENDRON also PROPAGATE themselves very fast by their trailing branches, which strike root as they go, and each of which will be a plant.

The VENETIAN SUMACH is easily increased by layers; for the young shoots being slit and layered in the autumn, by the autumn following will be good plants, either for the nursery-ground, or where they are to be planted out to stand.

The ELM-LEAVED SUMACH and the POISON-ASH, however, do not throw out suckers in this manner; and these are to be PROPAGATED from the seeds, which we receive from the places where they naturally grow. An east border of garden-mould (made fine) should be prepared; and in this the seeds should be sown as soon as possible after we receive them. The depth they will require will be about half an inch. After being sown, and the border dressed up, nothing more need be done till the weeds begin to come up, which will be before the plants: as often as these appear, they must be plucked up; and when the hot parching weather comes on, the border must be shaded in the heat of the day, and, every evening, should be gently sprinkled over with water. In the beginning of June many of the plants will come up; though they frequently remain, at least the greatest part of them, until the second spring before they make their appearance. After the plants are come up, they will want no other care than shading, weeding, and mow and then a watering during the first summer; and if the winter should be severe, they should be matted, especially the Elm-leaved sort, which is rather the most tender whilst young. After this they will require no other care than weeding until they are two-years-old seedlings; when, in the spring, they should be taken up and planted in the nursery-ground, and in two or three years more will be fit to set out for good. And here it must not be omitted to observe, that the other sorts before-mentioned, which propagate themselves so fast by suckers, may be raised this way if the seeds can be obtained; and, indeed,

whoever has not the conveniency of procuring a few plants of each, and can have the seeds, must practise this method with them, by which he will soon procure plenty.

R O B I N I A.

LINNEAN Class and Order, *Diadelphia Decandria* : Each flower contains ten males and one female ; the males being divided into two sets at the base : There are nine SPECIES ; four of which will bear the open air of this country.

1. ROBINIA *Pseudacacia* : The FALSE ACACIA ; a *deciduous tree* ; native of most parts of North America.

2. ROBINIA *Caragana* : The CARAGANA ; a *deciduous shrub* ; native of Siberia.

3. ROBINIA *Frutescens* : The SHRUBBY ASPALATHUS ; a *deciduous shrub* ; native of Siberia and Tartary.

4. ROBINIA *Pygmaea* : The DWARF ASPALATHUS ; a *low deciduous shrub* ; native of Siberia.

1. The FALSE ACACIA will grow to the height of thirty-five or more feet. The branches are covered with a smooth purplish-coloured bark, and armed with strong spines, which are placed at the buds. Each bud, especially of the young vigorous shoots, will be generally guarded by two of these spines, one of which will be on one side, while the other will occupy the opposite place. The branches are very brittle, and in summer, when the leaves are on, are often broke by the high winds. The leaves come out late in the spring ; but for this they make ample amends by the beautiful foliage they will display soon after. They are pinnated leaves, the most beautiful of all the compound sorts. The folioles of which each is composed are of a fine green ; and as there are no less than nine or ten pair of them placed along the mid-rib, with an odd one, the whole leaf appears very large ; and all the tree being thus ornamented has a noble look, even at that time. But this shrub will be in its greatest beauty when in flower ; for these will be
pre-

produced in long pendulous bunches, in June. They are of the papilionaceous kind ; their colour is white ; and when the tree blows freely, its head will be enchantingly covered with them ; for they will hang all over it in a free and easy manner ; some bunches appearing wholly in view, others again half hid by the waving leaves, that will sometimes alternately hide and shew them ; at which time also, when there is a current of air, the flowers themselves receive fresh beauty from being thus agitated. But this is not all : nature has granted them a smell, which is very grateful ; so that in an evening, or after a shower, they will perfume the circumambient air to some distance : Thus they will prove a feast to all those who will attend at those times, as they will never fail of regaling one of the senses by their grateful and profuse fragrance. These flowers, it is to be lamented, are of short duration ; and are succeeded by pods, which in some seasons will perfect their seeds with us.

The principal varieties of this species are, the *Scutlefs*, *Prickly-podded*, *Rose-coloured*, *Scarlet*, *Smooth-podded*, &c.
Acacia.

The *False Acacia* with *Rose-coloured* flowers appears to have the most material difference. It is of lower growth ; the young branches, and the footstalks and very cups of the flowers, are armed with prickly hairs or spines. The flowers are produced rather earlier than those of the other sorts ; they are large, and of a most beautiful rose-colour. They have no odour like the others ; but make a most noble show when in blow. They are succeeded by flat pods ; and the variety is most beautifully increased by this sort. The difference of the others is chiefly pointed out by the names which are in common used to express them.

2. *CARAGANA* rises, with a shrubby stalk, to the height of about eight or ten feet, sending forth several branches, which are covered with a greenish-yellow bark. The leaves are abruptly pinnated ; the folioles are oval, spear-shaped, pointed, and consist of about five or six pair arranged along the mid-rib. The flowers come out from the sides of the branches, on single footstalks : they are small, of a yellowish colour, appear in May, and are succeeded by smooth compressed pods containing the seeds, which will be ripe in September.

3. The

3. The **SHRUBBY ASPALATHUS** is a beautiful flowering shrub. Its growth will be seven or eight feet; and the branches naturally grow upright. The bark is smooth, and of a yellowish colour; but that of the youngest twigs partakes more of a purplish colour on one side, and is on the other often of a light green with a yellow tinge. The leaves are each composed of about four folioles, which are oval and pointed. The flowers are produced in May, from the joints of the branches, upon single footstalks: they are of a fine yellow colour, and of the butterfly make; and so adorn the tree when in blow, as to render it inferior to few of the flowering-shrubs. These flowers are succeeded by pods, containing ripe seeds, in the autumn.

4. **DWARF ASPALATHUS** is a pretty little shrub, sending forth several slender branches, which are covered with a golden bark. The leaves are quaternate, wedge-shaped, obtuse, have no footstalks, and, unless very severe weather happens, continue on the plant the greatest part of the winter. The flowers come out from the sides of the branches, on single footstalks; they are small, of a yellow colour, appear in May, and are succeeded by ripe seeds in the autumn.

The **PROPAGATION** of all these sorts is very easy, and may be done; 1. By seeds. If these are sown the beginning of March, half an inch deep, in a bed of any common garden-mould, plants will come up in May, which will want no other care than weeding all the first summer, and no protection of any kind in the winter; for they are all hardy enough. In the following spring they should be planted out in the nursery-ground, a foot asunder, and two feet distant in the rows; and here (the three first sorts) they should not stand longer than two or three years before they are set out to stand, as they will grow exceeding fast, and by that time will be perhaps six feet in height. The fourth sort being of lower growth, the plants may be pricked in beds, a foot asunder, which will be room enough for them to grow in, before they be finally set out. It may not be amiss to observe also, that the seeds of this sort often remain until the second spring before they come up; so that when they do not appear the first after sowing, the beds must be kept weeded all summer; and, if the seeds were good, there will be no fear of a crop the following spring. 2. These sorts are easily propagated by cuttings, which if planted in October, in a moistish

moistish shady border, many of them will grow. Here they should stand two years, when they will be proper plants to be planted out; though we must observe, that the fourth sort may remain longer before they are set out; and as the cuttings of that sort have often failed growing, the most certain method, and what is generally practised when there are no seeds, is to encrease it by layers. 3. The first sorts will encrease themselves by suckers, in sufficient plenty; for the old plants will spawn at a considerable distance, and afford such a quantity of free-shooting suckers, that they will be all good plants, fit to be set out for continuance.

R O S A.

LINNEAN Class and Order, *Icosandria Polygynia*: Each flower contains about twenty males and many females: There are eighteen SPECIES; thirteen of which we here enumerate:

1. *Rosa Canina*: The DOG-ROSE, or HEP TREE; a *deciduous shrub*; common in our hedges, and most parts of Europe.

2. *Rosa Pimpinellifolia*: The BURNET-ROSE, or CAT-WHIN; a *deciduous shrub*; natural to England and most parts of Europe.

3. *Rosa Spinossima*: The SCOTCH ROSE; a *deciduous shrub*; native of Scotland, England, and most parts of Europe.

4. *Rosa Alpina*: The ALPINE ROSE; a *deciduous shrub*; native of the Alps of Switzerland.

5. *Rosa Eglanteria*: The EGLANTINE, or the SWEET-BRIAR; a *deciduous shrub*; native of England and Switzerland.

6. *Rosa Cinnamomia*: The CINNAMON ROSE; a *deciduous shrub*; grows in the southern parts of Europe.

7. *Rosa Carolina*: CAROLINA ROSE; a *deciduous shrub*; native of North America.

8. *Rosa Villosa*: The APPLE ROSE; a *deciduous shrub*; native of most parts of Europe.

9. ROSA

9. *Rosa Centifolia* : The HUNDRED-LEAVED ROSE ; a *deciduous shrub* ; it is not known where this Rose grows naturally.

10. *Rosa Gallica* : The GALLICAN ROSE ; a *deciduous tree* ; grows naturally in most parts of Europe.

11. *Rosa Sempervirens* : The EVER-GREEN ROSE, or MUSK ROSE ; an *ever-green shrub* ; native of Germany.

12. *Rosa Pendulina* : The LONG-FRUITED ROSE ; a *deciduous shrub* ; native of Europe.

13. *Rosa Alba* : The WHITE ROSE ; a *deciduous shrub* ; native of Europe.

1. The DOG-ROSE grows all over England, and is seldom cultivated in gardens. It is, nevertheless, possessed of many beauties, if observed with due attention ; and, if it was not so very common, would deserve a place in the choicest Collection.

The *varieties* of this species are, the Hep-tree with Red Flowers, the White-flowered Hep-tree.

2. BURNET-ROSE is a small-growing tree, seldom rising higher than one yard. The flowers are single, and make no great figure ; but what renders this Rose valuable is, that the leaves are pinnated in such a manner as to resemble those of the burnet, which occasions its being so called, and by which it constitutes an agreeable variety among the leafy tribe.

The *varieties* of it are, Red-flowered Burnet-leaved Rose, Black Burnet-leaved Rose, White Burnet-leaved Rose.

3. SCOTCH ROSE. The *varieties* of this species are all of low growth, and known by the respective names of,

Dwarf Scotch with a White Flower,

Dwarf Scotch with a Red Flower,

Dwarf Scotch with a Striped Flower,

Dwarf Scotch with a Marbled Flower.

They are all beautiful flowering shrubs. The White flowering sort will grow to the highest size, as it will commonly grow to be three feet, whilst the others seldom rise to above two feet in height. The branches are upright and numerous, and smartly set off by their beautiful pinnated leaves ; for the leaves of these sorts excel those of all other Roses in delicacy, the folioles being small, of a good green colour, and arranged along the mid-

rib in the manner of those of the burnet. The flowers will be produced from the branches in vast profusion; and though they are all single, they make a show inferior to few shrubs. In winter they will be full of hews that have the appearance of black-berries; and if the weather be mild, the young buds will swell early, and appear like so many little red eyes all over the shrub, which is a promise of the reviving season. The young branches of all these sorts are exceeding full of prickles.

4. ALPINE ROSE. This is usually called the Rose without Thorns, the branches being perfectly free from all kinds of prickles. They are exceedingly smooth, of a reddish colour, and look well in winter. The flowers are single, and of a deep-red colour. They come out in May, before any of the other sorts; and the plant is valued by some people on that account. They are succeeded by long narrow hews, which look angular, and, together with the early appearance of their flowers, and their beautiful twigs, that are wholly free from the armature of the other sorts, cause this species to be much admired.

5. EGLANTINE, or Sweet-Briar. The varieties of this species are, Common Sweet-Briar, Semi-double Sweet-Briar, Double Red Sweet-Briar, Maiden Blush Double Sweet-Briar, Sweet-Briar with Yellow Flowers.

The *Common Sweet-Briar* is well known all over England. The branches, which are of a reddish cast, are all over closely armed with prickles; the flowers are single, and of a pale-red colour, like those of the Common Wild-Briar. The leaves constitute the value of this plant; for they are possessed of so grateful an odour, as to claim admittance for this sort into the first class of aromatic plants: the odoriferous particles they emit are sweet and inoffensive; and they bestow them in such profusion, especially in evenings or after a shower, as to perfume the circumambient air to a considerable distance. For this reason, plenty of Sweet-Briars should be planted near much-frequented walks; or if the borders of these are designed for more elegant flowering shrubs or plants, they may be stationed at a distance, out of view, and then they will secretly liberally bestow their sweets, to the refreshment of all. For nosegays, also, there is nothing more proper than sprigs of the Sweet-Briar, when divested of its prickles; for they will not only have a good look

as a fine green in the center of a posy, but will improve its odour, let the other flowers of which it is composed be what they will.

Semi-double Sweet-Briar differs in no respect from the Common, only that the flowers consist of a double series of petals that surround the stamina. The leaves are possessed of the same fragrance; but this sort is thought more valuable on account of the flowers, which, being possessed of more petals, make a better figure.

Double Sweet-Briar. The number of petals are so multiplied in this sort as to form a full flower; and it seems to differ in no other respect from the other Sweet-Briars. The flowers are red, and so large and double as to be equal in beauty to many of the other sorts of roses. As by the fragrance of their leaves they afford us a continual treat during the summer months, as well as by their fair flowers at the time of blowing, all who pretend to make a Collection are careful of procuring plenty of this sort.

Double Blush Sweet-Briar is a most valuable, and at present a very scarce, plant. It seems to have a tendency not to grow so high as the other sorts of Sweet-Briars. The branches are green, and closely armed with strong prickles. The flowers are of a pale-red or blush colour, and every whit as double as the Cabbage-Provence-Rose: it cabbages in the same manner, and is very fragrant. No one need be told the value of a Rose which has every perfection and charm, to the highest degree, both in the leaves and flowers, to recommend it.

Sweet-Briar with Yellow Flowers. The flowers of this sort are single; the petals are of a bright-yellow colour; but it differs in no other respect from the Common Sweet-Briar.

6. CINNAMON-ROSE. The *varieties* of this species are, Single Cinnamon-Rose, Double Cinnamon-Rose.

The *Single Cinnamon-Rose* is a much stronger shooter than the Double sort, which is better known. It will grow to be ten or twelve feet in height. The young branches are of a reddish colour. The flowers are single, and have the same hue as those of the Double. It is rather a scarce plant at present; on which account chiefly it is thought valuable.

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The *Double Cinnamon-Rose* will grow to about six or seven feet high, and the branches are many and slender. The prickles are pretty numerous, and the young shoots in winter are of a red colour, with a purplish tinge. This sort, which ushers in the flowery tribe of Double Roses, will be in blow sometimes pretty early in May. The flowers are small, but very double: they are of a purplish red, very sweet, and have a little of the smell of cinnamon, which occasions this Rose to be so called; and on that account only, not to mention their early appearance, this sort is desirable.

7. *CAROLINA ROSE*. The varieties of this species are usually called, Wild Virginian Rose, Pennsylvania Rose, Pale-red American Rose.

The *Wild Virginian Rose* will grow to be nine or ten feet high. The branches are covered with a smooth red bark, and guarded by a very few prickles. It produces its flowers in August, when most of the other sorts are out of blow, and is by many valued for that reason. The flowers are single, of a red colour, are produced in clusters, and will continue blowing from the beginning of August until October. Neither is this the sole beauty this sort affords us; for the flowers will be succeeded by heps, which in winter appear like so many red berries all over the shrub. These heps serve as food for birds, and are therefore much frequented by thrushes and others of the whistling tribe, who will be ready to usher in, by their sweet warbles, the earliest dawn of spring. This tree grows wild in Virginia, and many parts of North-America, from whence we receive the seeds, and propagate it not only on some of the above accounts, but because it is naturally an upright well-growing tree, and makes a good figure in winter by its red and beautiful shoots.

The *Pennsylvania Rose* seems to differ in nothing from the former, except its size, it seeming to be a plant of lower growth; and the Pale-red sort occasions variety only from the lobes of the flowers.

8. *APPLE-ROSE*. This species is a curiosity, not so much from the singularity of the shoots, leaves, or flowers, as fruit. The shoots, indeed, will be strong and bold, and in winter distinguish the tree from others by a degree of eminence. They
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are then covered with a smooth reddish bark ; and the prickles which guard them are thinly placed, though those are very strong and sharp. Many think this tree has a good look in winter, and value it much on that account. As to the leaves, they are nearly the same as the other sorts of Roses ; but are large, and very hairy and downy underneath. The flowers are single, of a red colour, and are succeeded by hips as large as little apples. To their account the value chiefly of this sort is to be placed ; for being thus large, they occasion a singular look ; and this is heightened by being all over beset with soft prickles. For use as well as beauty this sort is propagated by sowing ; for these hips or fruit, when preserved, make a sweetmeat greatly esteemed.

9. HUNDRED-LEAVED ROSE. This is a very extensive species, and includes all *varieties* whose stalks are hispid, prickly, and have leaves growing on footstalks which are not armed with prickles ; and whose flowers have oval, hispid germina and footstalks. Of this kind are, the Deep Red Provence, the Pale-red Provence, the Large Cabbage Provence, the Dutch Provence, the Childing Provence, the Moss Provence, the Great Royal Rose, the Blush hundred-leaved Rose, the Dutch hundred-leaved Rose,

The *Provence-Roses* are all well known. The Red and the Pale Provence sorts differ, in that one is a deep, the other a pale red ; the petals are larger and looser than the Cabbage-Provence, and make varieties. The Cabbage-Provence is the best of all the sorts ; and, if its commonness does not detract from its value, is inferior to no Rose. The Dutch Provence has a tendency to cabbage, and is of a deeper red than the Common Provence. The Childing is of lower growth than any of the other sorts, seldom growing to be more than four feet : it is naturally of upright growth, and the bark is brown and prickly. The flowers at first are globular, though they will afterwards open at top, and display their petals folded a little like those of the Belgic. All these are beautiful roses, and greatly ornamental either to shrubberies or gardens.

The *Moss-Provence* is a sort that has been sought after of late more than any of the others. Its branches are of a dusky brown, and they are all over closely beset with prickles. The flowers
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are like those of the Common Provence; though they have a stronger footstalk, and grow more upright. About the calyx of the flower grows a kind of moss, which is of a yellowish-green colour, and by which it will be wholly surrounded. This Rose has not been many years known in England, and from whence it was first brought is uncertain. It seems to owe its excellence to the mossy substance growing about the footstalk and calyx of the flower; but were this as common as the other sorts of Provence-Roses, that would be looked upon as an imperfection; for though this flower naturally is possessed of the same agreeable fragrance as the other Provence-Roses, yet this mossy substance has a strong disagreeable scent, and is possessed of a clammy matter.

Great Royal Rose is one of the largest, though not the compactest, Roses we have. It will grow to be eight or nine feet high. The branches are brown, and have a number of prickles. The flowers are red, and possessed of a very grateful odour, and the petals very large. Upon the whole, this is a sort very much coveted, and is one of the best Roses in England.

The *Blush and Dutch Hundred-leaved Roses* differ in no respect, only that the flowers of one are of a paler red than those of the other; and both these sorts may contend for the prize of beauty with any of the Rose tribe. They seldom grow more than four feet high. The branches are green and upright, and have very few spines. The flowers are large, and exceedingly double: Each is composed of numerous short petals, which are arranged in so regular a manner as to form a complete flower; and it is on account of the extraordinary number of these petals that this Rose takes the name of Hundred-leaved Rose. We seem to do injustice to this Rose, when we do not pronounce it the fairest of the whole list; but when we reflect on the surpassing delicacy and beauty of many other sorts, we are obliged to give the preference to none.

10. **GALLICAN ROSE.** Under this title are arranged all those Roses whose branches and footstalks of the leaves are hispid and prickly, and whose flowers have oval, hispid germina, and grow on hispid footstalks. Of this kind are,

The Semi-double Red Rose,
The Old Double Red Rose,
The *Rosa Mundi*, or Variegated Rose,

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The

The York and Lancaster Rose,
 The Semi-double Velvet Rose,
 The Full-double Velvet Rose,
 The Blush Belgic Rose,
 The Red Belgic,
 The Blush Monthly,
 The Red Monthly,
 The White Monthly,
 The Striped Monthly,
 The Red Damask,
 The White Damask,
 The Blush Damask,
 The Doubled Virgin,
 The Marbled,
 The Great Spanish,
 The Yellow Austrian Rose,
 The Copper-coloured Rose,
 The Double Yellow,
 The Franckfort Rose.

11. **THE MUSK-ROSE.** The **EVER-GREEN** sort is naturally a climbing plant, but if planted singly will form itself into a bush of five or six feet high: its flowers are single, white, and fragrant.

Besides the Evergreen, there are two deciduous *varieties* of this species, called, the Single Musk-Rose, and the Double or Semi-double Musk-Rose.

Single Musk, or White Cluster, is a scarce and valuable Rose. The young shoots are covered with a smooth green bark, and are not possessed of many spines; those few they have are very strong, and of a dark-brown colour. This sort produces its flowers in August, in very large clusters; they are of a pure white; and the tree will continue to exhibit its succession of flowers until the frost puts a period to the blowing. The ends of the branches are frequently killed by the frosts in the winter; so that early in the spring they should be gone over with the knife, and all dead wood taken off, which would have an ill look, amongst the healthy leaves and young shoots.

The *Semi-double and Double Musk, or White Cluster-Roses,* are

are late-flowering sorts. They will begin blowing in August, and continue so till the frost puts an end to the glories of that season. The stalks are covered with a smooth green bark, which will be armed with a few very strong, brown, crooked spines. The flowers are of a pure white, and produced in large clusters, at the ends of the branches. These at present are not common, and are much coveted by the curious.

12. *Pendulous-fruited Rose* grows only to about five or six feet high, sending forth several hispid branches from the bottom to the top. The leaves are composed of many oval folioles, arranged along the mid-rib, and their footstalks have few or no prickles. The flowers have oval, smooth germina, grow on hispid footstalks, and are succeeded by long pendulent fruit, full of seeds.

13. The WHITE ROSE. The characteristics of this species are, the stalks and footstalks of the leaves are prickly, the flowers have oval smooth germina, and grow on hispid footstalks. Of this kind are,

The Double White Rose,

The Semi-double White,

The Dwarf White,

The Maiden's Blush Rose.

All the sorts of Roses are to be PROPAGATED, 1. By layers. For this purpose, in order to obtain plenty of them, a sufficient number should be planted for stools; and after these have been planted a year or two, they should be headed near the ground, which will make them throw out plenty of young shoots. In the autumn, these should be layered in the ground. The best way to do it is by a slit at the joint, though a gentle twist will often do as well, particularly for all the sorts of Monthly Roses, Damask-Roses, and Sweet-Briar, which will readily take if the bark be just broke, and will often send forth roots at every joint by the autumn following. Most of the other sorts do not strike root so freely; so that amongst them, by the autumn, after layering, few will be found strong enough, and with root sufficient, to be planted out to continue. However, in general, they will have roots, and oftentimes very good ones. In the autumn every layer must be taken up, the stools neated up, and a fresh operation performed on the young shoots that may have shot the preceding summer. The layers that have

been taken up should be planted in the nursery, at no very great distance, and the sorts should be kept separate and booked, number-sticks being made to the separate sorts, that they may be distinctly known. The Moss-Provence and the Musk-Roses do not strike root so freely by layers; neither does the Apple-bearing Rose; so that for all these sorts you must often wait two years before you take off the layers from the stools, and sometimes longer; which is the reason of these plants being rather scarce, they not being to be expeditiously propagated in plenty. 2. These trees may be propagated by suckers, which most of the sorts have a natural tendency to throw out; and these may be taken up, and the strongest and best rooted set out to stand, whilst the weakest may be planted in the nursery for a year or two, to gain strength. But here we must observe, that the Moss-Provence, Musk and Apple-bearing Roses seldom throw out suckers; so that we must not wait for them from these sorts, but must get forward with our layering. 3. The Common Sweet-Briar is to be propagated by seeds. These should be sown as soon as they are ripe, in a bed of common garden-mould made fine. They generally remain until the second spring before they come up, and afterwards will require no other care than weeding until the spring following, when they may be taken up, and planted in the nursery at small distances; and in two or three years time they will be good plants for the shrubbery, wilderness, or hedges. And indeed as great quantities of these odoriferous plants are often wanted, this is the easiest and most expeditious way of raising them in plenty.

By seeds also the Burnet-leaved, Apple-bearing, and Red or White Scotch Roses may be raised; which are doubtless distinct species, and will preserve the sorts by seeds.

R U B U S.

LINNEAN Class and Order, *Icosandria Polygynia*: Each flower contains about twenty males and many females: There are

are eighteen SPECIES; four of which are applicable to our purpose :

1. RUBUS *Fruticosus*: The COMMON BRAMBLE; a well-known trailing plant; common in most countries in Europe.

2. RUBUS *Hispidus*: The CANADA BRAMBLE; a trailing plant; native of Canada.

3. RUBUS *Cæsius*: The DEWBERRY or CÆSIUS; a trailer; native of moist places in most parts of England and Europe in general.

4. RUBUS *Odoratus*: The VIRGINIA RASPBERRY; a deciduous shrub; native of Virginia and Canada.

1. The COMMON BRAMBLE admits of the following varieties :

The Double-blossomed Bramble, the Bramble without Thorns, the Bramble with White Fruit, the Cut-leaved Bramble, the Variegated Bramble.

The *Double-blossomed Bramble* differs in no respect from the Common Bramble, only that the flowers are very double. The stalks, like that, are closely armed on all sides by strong crooked prickles, that turn backwards. They are, like that, channelled; and in the winter have some of a reddish-purple colour, others green, some red on one side and green on the other. The leaves also are shaped like the hands, and are composed sometimes of three, sometimes of five lobes. They have their upper surface smooth, and of a fine green colour, whilst their under is of a whitish colour. The footstalks that support them are prickly, and a series of prickles are arranged all along the midrib of each lobe. They continue on the plants most part of the winter, at the beginning of which they are green; but after Christmas they turn brown, and seldom look well after. This is the description of the Common Bramble, and of the Double sort also, which differs in no other respect than in the doubleness of the flower. They are produced in the same manner at the ends of the shoots, each of which is exceeding double. The petals are whiter; and as a profusion of these ornament the ends of most of the shoots in the same manner as the flowers of the Common sort, they make a show, and are beautiful beyond expression. It may be

kept down and confined, to have the appearance of a flowering-shrub. The flowers are succeeded by no fruit. It will thrive and flower exceedingly well under the drip of trees; so that for old plantations, this is a useful plant for the under shrubs, as it will flourish where hardly any thing else will grow.

Bramble without Thorns, is not near so strong a shooter as the Common-Bramble, the shoots being more trailing and slender, perfectly smooth, and of a blueish colour; and on this account it is that this plant is held as a curiosity. A curiosity, indeed, it is; and many have expressed their agreeable surprize to find a Bramble that they could familiarly handle without hurt. The leaves of this sort have a blueish tinge, and the footstalks and mid-rib are entirely free from prickles. It flowers in the same manner as the Common Bramble, though the flowers are rather smaller; and are succeeded by black berries, on which the insects do not seem to swarm in such plenty as they do on the other sort.

Bramble with White Fruit is deemed curious only on that account, and has (says HANBURY) often given occasion to a hearty laugh, by a bull which has been made by many on their first seeing this fruit, who have cried out with surprize, "Here is a Bramble that bears white black-berries." It is, therefore, the colour of the fruit that makes this sort coveted, though the leaves are of a lighter green than any of the other sorts, and on that account make a variety among the leafy tribe.

Bramble with Cut Leaves differs from the Common only in that the leaves are cut in an elegant and beautiful manner. It affords a variety in no other respect; and those that are fond of such, are sure of meeting one in this, whose leaves being thin and elegantly cut, make the plant have a different look from the other sorts.

Variegated Bramble differs in no respect from the Common Bramble, only it is a weaker plant. The leaves are striped; and it is valuable only to those who are fond of variegated shrubs.

2. AMERICAN BRAMBLE. The shoots of this species are long, ligneous, procumbent, rough, and hairy. The leaves are trifoliate, naked, cut at the edges, serrated, and grow on hispid

hispid footstalks. The footstalks of the flowers also are hispid. They come out from the ends and sides of the branches, in July and August; and are succeeded by round reddish fruit in the autumn.

3. **CÆSIUS, Small Bramble, or DEWBERRY-BUSH.** The stalks of this sort are weak, slender, prickly, and trailing. The leaves are trifoliate, large, and usually of a dusky-green colour. The flowers are whitish, come out from the ends and sides of the branches, in July and August, and are succeeded by large blue fruit, which will be ripe in the autumn, and of which an excellent wine is made.

All these sorts may be PROPAGATED by cuttings. They should be planted in the autumn, in a shady border, and by the autumn following they will be fit to remove. But as a crop from cuttings often fails, the best way will be to throw some mould over the shoots, as they strike in the spring; and when they have shot two or three feet farther, cover them afresh, and so on all summer. By this means, those parts that were first covered will have either struck root, or they, together with all the others, will be preparing to strike root: so that being cut into lengths, and the parts before covered planted again in earth, and about three or four inches of the uncovered part being above ground, almost every one of the cuttings of this nature being thus prepared will grow, and thus plenty of plants may be soon obtained.

4. **The VIRGINIA RASPBERRY.** All the sorts of Raspberries are species of *Rubus*, and are propagated for their fruit; but this sort is cultivated solely to mix with our flowering shrubs. It rises from the ground like the Common Raspberries, though it will naturally grow higher; but its growth is either higher or lower in proportion to the nature of the land or situation, as it will grow higher by two or three feet in a deep, rich, moist soil, than it will in a soil of the opposite nature. The stalks are of a brown colour, and wholly without prickles; and the strongest will divide into several smaller branches. The leaves are exceedingly large for a shrub of that height; from whence the plant derives no small beauty. They are broader than they are long, and of a fine green on both sides, the upper being of a dark, the under of a lighter colour. Each is divided into an

uncertain number of lobes, which are serrated, and end in acute points. These leaves grow alternately, on footstalks that are of a proportionable length and strength to the size of the leaves, they being often eight or nine inches broad, and seven or eight in length. The flowers are produced in July, in plenty, at the end of the stalks; and the succession will be continued for often more than two months; though they are always the most beautiful on their first appearance. They are of a purplish red, a colour which is very desirable at that time, when most of the other shrubs that are in blow will have yellow flowers. Each stands on a long footstalk; and many of them being collected into a kind of loose bunch, they make a tolerable figure. They are seldom succeeded by any fruit with us; and when this happens, it is of no flavour, and on that account of no value.

It is easily PROPAGATED from the suckers, which it sends forth in such abundance, that from a few plants, in a few years, almost any desired quantity may be obtained: nay, so fast do they creep and send forth stalks on all sides, that, unless they are constantly taken up as they grow, they will soon overspread and choak all smaller plants that grow near them. The best time for taking off the suckers is the autumn; though they will grow very well if planted either in the winter or spring.

R U S C U S.

LINNEAN Class and Order, *Diacia Syngenesia*: Male flowers containing three stamens, and female flowers containing one pistil; upon distinct plants: There are four SPECIES:

1. *RUSCUS Aculeatus*: The COMMON BUTCHER'S BROOM; an evergreen shrub; native of England, Italy and France.
2. *RUSCUS Hypophyllum*: The BROAD-LEAVED BUTCHER'S BROOM; an evergreen shrub; native of Italy.

3. *RUSCUS*

3. *Ruscus Hypoglossum* : The HYPOGLOSSUM ; an evergreen shrub ; native of Italy and Hungary.

4. *Ruscus Racemosus* : The ALEXANDRIAN LAUREL ; an evergreen shrub ; native place not known.

1. The COMMON BUTCHER'S BROOM will rise with tough, ligneous, streaked, green, spreading stalks, to about a yard in height. These proceed from a large, white, tender, creeping root, which will, if the plant has remained long, be found very deep in the ground. The leaves are of an oblong figure, of a dark dusky-green colour, and grow alternately on the stalks. Their edges are entire ; they are of a thick stiff consistence ; and their points are prickly, and as sharp as needles. The flowers grow on the middle of the upper surface of the leaves, and will be ripe in June. They are small and greenish ; and the females are succeeded by large beautiful red berries, of a sweetish taste. This plant is of great use to the butchers, who gather it to make different besoms, both for sweeping of their shops and cleaning of their blocks ; from whence it has the appellation of Butcher's Broom. The young tender shoots of this shrub, in the spring, may be eaten like hop-tops or asparagus, and some people are very fond of them. The seeds and roots are much used in medicine.

2. The BROAD-LEAVED BUTCHER'S BROOM has large white roots, with long thick fibres, and from these rise pliable stalks, which will grow to be near a yard high. These stalks are of a very fine green colour, and are very tough and numerous. They produce their leaves in an alternate manner, are of a very fine shining-green colour, and of a thick consistence. They are longer and broader than the other sort ; their figure is oval, and they end in acute points. The flowers of this sort grow on the under surface of the leaves, near the middle. These are small, and of a greenish white. They are produced in July ; and the seeds that succeed them are small and red, and will be ripe in winter.

3. The HYPOGLOSSUM is the lowest of all the sorts, as the stalks seldom get to above a foot high, and has very few pretensions, indeed, to be called a shrub ; nevertheless, it may justly claim a place at the edge at least of all evergreen shrubberies. The roots are nearly of the same nature with the other sorts, and the stalks

stalks are numerous and pithy. They are of a dull-green colour, and striated; and they produce their leaves in an irregular manner, being sometimes alternate, whilst others again may be seen standing opposite by pairs. These leaves are of a lanceolated figure, and are of the same dull-green colour with those of the stalks. They are from three to four inches long, and about one broad. They grow without any footstalks, being narrow at both ends, and their edges naturally turn towards the center of the upper surface. They are free from serratures; and from the stalk or base of the leaves run several veins the whole length, which gradually diverge from the middle, but approach again in the same manner until they all end in the point of the leaf. Each of these leaves produces another small leaf of the same shape, from the middle of its upper surface; and from the bottom of these small leaves are produced the flowers. These will be ripe in July, are small and yellowish; and the fruit that succeeds them is large and red, and will be ripe in winter.

4. The ALEXANDRIAN LAUREL has the same kind of white scaly roots with long thick fibres as the others, and the branches are very numerous and pliable. They are smooth and round, of a shining-green colour, and produce others smaller, alternately from the bottom to the top. They will grow to be four or five feet high, and their pliable branches are nevertheless brittle near the bottom. The leaves grow chiefly on the smaller side-shoots, and on these they are placed alternately. They sit close to the branches, are smooth, of a delightful shining-green colour, and have several small veins running the whole length, diverging from the middle, but approaching again to end at the point. They are from two to three inches long, and about one broad, are of an oblong lanceolated figure, and end in very acute points. The flowers are produced in long bunches, at the ends of the branches. Each of them is small, and of a yellowish colour; and they are succeeded by large red berries, which will be ripe in winter.

There is a *variety* of this sort with red flowers. "This species of *Ruscus*," says HANBURY, "is supposed to be the Laurel which composed the wreaths worn by the ancient victors and poets; and indeed with good reason, not only on account of its pliability, by which it might be easily wrought for such
pur-

purposes, but the wreaths on the ancient busts, &c. seem to figure to us the leaves and slender branches of the plant we are treating of."

There is another sort of *Ruscus*, which has oval acute-pointed leaves, growing by threes round the stalks, and which produce the flowers and fruit from the mid-rib on the under surface; also another sort, with oval acute-pointed leaves which produces the flowers from the mid rib, on the upper surface. But as these are only varieties of the above sorts, have the same kind of roots, produce the same kind of slender pliable branches, and have their flowers succeeded by nearly the like kind of berries, nothing more need be said of them.

All these sorts may be easily PROPAGATED. 1. After having obtained a plant or two of each, their roots will encrease so fast, and will proportionably send forth such a quantity of stalks, that each of them will soon form itself into a little thicket: these, then, are to be taken up and divided; and from one original root or off-set many will be soon produced. The best time for this work is early in the autumn; though they will grow very well if divided and removed in the spring, or any time in the winter. 2. These plants are also to be encreased by seeds. This, however, is a slow way; but must, nevertheless, be practised, when the plants cannot be obtained. The beds for their reception must be made fine, and cleared of the roots of all weeds. They will require no other compost than that of good common garden-mould. They should be sown an inch and a half or two inches deep, and the beds should be neated up to lie undisturbed, for they will not come up before the second, and sometimes the main crop the third, spring after sowing. All the summer they should be kept clean of weeds; and if the beds wear away so as to endanger the seeds being laid bare, a little fine mould should be riddled over them, to supply what may be lost by wear in weeding, settling, &c. After they are come up, they will require no other care than weeding, for they are very hardy; and when they come too thick in the spring after the frosts are over, the strongest should be drawn out and planted in beds six inches asunder. This will make room for the others to flourish; and though mention is made of removing these plants after the frosts are over, it is not because they are tender and subject to be destroyed by it, but if they are removed in the autumn, or early in the winter, being then

then small, the frosts generally throw them out of the ground, to the great danger, if not entire loss, of the whole stock of the new-removed seedlings. This, however, is considered by few Gardeners who have not paid dear for their experience, and is what is chiefly recommended by our modern authors, to transplant seedlings of most sorts from the beds in October; which indeed would be an excellent month, were no frosts to ensue. But good thought and experience, by fatal practice, have taught the Gardener now, to defer the removing his small seedlings until the spring, when they will not be liable to be turned out of their warm beds when they should least like it, by the rigours of the winter. But to return: After the seedlings are two or three years old, whether they have been removed or not, they will by that time be good strong plants, fit for removing, and may be then taken up and planted out.

S A L I X.

LINNEAN Class and Order, *Diœcia Decandria*: Male flowers containing two stamens, and female flowers containing one pistil; upon distinct plants: There are several SPECIES; fifteen of which are cultivated in this country:

1. SALIX *Alba*: The COMMON WHITE WILLOW; a *deciduous tree*; common about towns and villages in most parts of Europe.
2. SALIX *Vitellina*: The GOLDEN WILLOW; a *deciduous tree*; native of England and most parts of Europe.
3. SALIX *Purpurea*: The PURPLE WILLOW; a *deciduous tree*; native of England and the south of Europe.
4. SALIX *Pentandria*: The SWEET WILLOW; a *deciduous tree*; native of mountainous and marshy swampy grounds in most parts of Europe.
5. SALIX *Babylonica*: The WEEPING WILLOW; a *deciduous tree*; native of the East,

6. SALIX

6. *SALIX Hermaphroditica* : The SHINING WILLOW ; a *deciduous tree* ; grows about Aston in Cumberland, and also Upsal in Sweden.
7. *SALIX Triandria* : The TRIANDROUS WILLOW ; a *deciduous tree* ; native of Switzerland and Siberia.
8. *SALIX Phyllicifolia* : The PHYLICA-LEAVED WILLOW ; a *deciduous tree* ; native of the north of Sweden.
9. *SALIX Amygdalina* : The ALMOND-LEAVED WILLOW ; a *deciduous tree* ; native of England and most parts of Europe.
10. *SALIX Hastata* : The HASTATED WILLOW ; a *deciduous tree* ; native of Lapland and Switzerland.
11. *SALIX Fragilis* : The CRACK WILLOW ; a *deciduous tree* ; native of England and the north of Europe.
12. *SALIX Helix* : The ROSE WILLOW ; a *low deciduous tree* ; native (though not common) of England and the Southern parts of Europe.
13. *SALIX Caprea* : The SALLOW ; a well-known *low deciduous tree* ; native of England and most parts of Europe.
14. *SALIX Viminalis* : The OZIER ; a *low deciduous tree* ; native of England and most parts of Europe.
15. *SALIX Glauca* : The GLAUCUS WILLOW, or ALPINE SALLOW ; a *deciduous shrub or tree* ; native of the Alps of Lapland and the Pyrenees.

1. The WHITE WILLOW. This is a tall-growing tree, and being universally known needs no description. The silvery elegance of its leaves would render it very *ornamental*, were it not for its too great commonness : it is a quick grower, and its wood is *useful* when lightness and a cleanness of grain is required*.

2. The

* HANSBURY, speaking of Aquatic Forest-Trees, says, "The sorts used for plantations of these trees have hitherto been our common white and red Willow. These, however, seem now to give place to more sorts, which have been lately introduced. A few years ago I saw in the public papers an advertisement of a Willow which would grow large enough for masts of ships, &c. in twenty or thirty years; and in another paper there was an account, that these trees might be seen in full maturity at one Squire Angel's, about three miles from Westminster-Bridge. I went to examine them, but when I came found them the Common White Willows, which, having liked the situation, had grown to a great size and beauty. I enquired out the au-
thor

2. The **GOLDEN WILLOW** may be admitted into ornamental plantations, not for any extraordinary figure these trees will make in summer, but from the show they make in winter; for their bark is smooth, and of a clear yellow; and in that season they have a singular and striking effect among other trees. This will not grow to near the size of the other sort.

3. The **RED WILLOW** is a free shooter, and will grow to a size almost as large as the Common White Willow. A few of these only should be admitted into our plantations; for they have no singular look in summer; but in winter their bark appears of a red colour, which makes a pretty variety among other trees at that season; but it is, nevertheless, not near so striking as the yellow sort.

4. The **SWEET-SCENTED WILLOW**. This will grow to be a large timber-tree, and the branches are covered with a smooth brown bark. The leaves of this sort resemble those of the Bay-tree, and are by far the broadest of any of the sorts of Willows. They are smooth, and have their upper surface of shining green; but their under surface is paler, and they are serrated at their edges. They emit, especially when bruised, a grateful odour; so that as an aromatic it claims a place in these plantations among others of its own growth. Indeed it deserves it; for air will frequently be perfumed by the fragrance of its leaves after a shower to a considerable

thor of the advertisement, but found he knew nothing of the nature of these Willows, and that he had his account from a basket-maker near Westminster-Bridge. Upon applying to the basket-maker, he disavowed knowing any thing of the trees growing by Mr. Angel's, but said he had two sorts of Willows, which would answer in every respect to the first advertisement; that they were of all others the freest shooters; that they were not so subject to rot in the sides as the large White Willow Tree; but that they would grow sound to timber fit for masts of ships, &c. in less than thirty years. He added, that he had cuttings many years ago brought him from the coast of France, by a Captain whose name I have forgot. I immediately procured some cuttings of these sorts, which grow to a miracle, and seem as if they would answer the promised expectation; so that these now are the trees of which our future timber-plantations should consist: nay, whether they are designed for the basket-makers or for hurdles, they ought to have their share; and should always be preferred to be planted out for standards for lopping, by the sides of rivers, rills, ditches, &c. The cuttings of these two sorts have been dispersed into almost every quarter of England; so that there is no doubt but that in a few years the planting of them alone for timber will become general, as they may be increased at pleasure, by every slip or twig."

distance;

distance ; so that it will readily join with other aromatics in perfuming the air with their spicy odours.

5. **THE WEEPING WILLOW** of Babylon will grow to be a large tree ; and no tree is more proper to be planted by rivers, ponds, over springs, &c. than this ; for its slender branches are very long and pendulous ; the leaves, also, are long and narrow ; and when any mist or dew falls, a drop of water will hang at the end of each of these leaves, which, together with the pendulous branches and leaves, cause a most pleasing appearance. Lovers garlands are said to have been made of the wreaths of this Willow, the branches of which are very slender and pliable ; and the plant itself has always been sought after for ornamental plantations, either to mix with others of the like growth in the largest quarters, or to be planted out singly over springs, or in large opens, for the peculiar variety they will occasion by the elegance of their outline.

6. **SHINING WILLOW** is a large-growing tree, sending forth several slender branches, which hang down, and are covered with a pale-brown bark. The leaves are smooth, glandulous, serrated, and of a yellowish-green colour. The flowers are numerous hairy katkins, and the male flowers have two stamina only. They appear early in the spring ; and the females are succeeded by downy seeds, like the Common Willow.

7. **TRIANDROUS WILLOW** is a large-growing trees, sending forth numerous, erect, flexible branches, which are covered with a greyish bark. The leaves are oval, smooth, spear-shaped, acute-pointed, serrated, green on both sides, and eared at their base. The katkins are long, narrow, loose, and appear early in the spring. This sort is planted by the basket-makers, to mix with other kinds for their different sorts of work.

8. **PHYLICA-LEAVED WILLOW.** This is a tree of rather lower growth than the former. The branches are numerous, flexible, tough, and serviceable for several articles in the basket-way. The leaves are spear-shaped, smooth, serrated, and waved on their edges. The flowers are long katkins, which come out early in the spring from the sides of the branches ; and they soon afford a large quantity of down, which

which is waisted about with the winds to a considerable distance.

There is a *variety* of this with broad leaves.

9. ALMOND-LEAVED WILLOW: This is a Willow of the middle size, sending forth numerous flexible tough branches, covered with a light-green bark. The leaves are spear-shaped, smooth, serrated, acute, eared at their base; and, of a light-green colour on both sides. The flowers are oblong katkins, which turn to a light down in the summer.

There are several sorts of this species, that are of inferior value to this, which is generally distinguished from the others by the name of the *Old Almond-leaved Willow*. The branches are very tough and flexible, and when planted in the Ozier-way, and grown to be one year's shoots from the stools, are very strong, and highly serviceable for the different purposes of basket-making.

10. HASTATED WILLOW. This is a middle-sized tree for the Willow kind, sending forth several long, green shoots from the stools, which are full of pith, but nevertheless tough and serviceable to the basket-maker. The leaves are nearly oval, acute, smooth, serrated, sit close to the branches, and have broad appendices at their base. The flowers, are an oblong, yellow katkin, and come out in the spring from the sides of the young shoots, almost their whole length.

11. CRACK WILLOW is another middle-sized tree for the Willow kind. The branches are very brittle, and covered with a brownish bark. The leaves are oval, spear-shaped, long, smooth, serrated, green on both sides, and have glandulous footstalks. The katkins are long, slender, and the scales are loosely disposed.

There is a *variety* of this species, with a yellow bark, which it casts every year, called the *Almond-leaved Crack Willow*. Both sorts are unfit for the basket-makers use, being very brittle; on which account this species gained the appellation of Crack Willow.

12. ROSE WILLOW. This is of much lower growth than the former. The body of the tree is covered with a rough, yellow bark. The branches are upright, tough, and
of

of a reddish colour. The leaves are spear-shaped, narrow, smooth, of a blueish-green colour, and, towards the upper part of the branches, are nearly opposite to each other. The flowers come out from the sides of the branches, and numbers of them are joined together in a rose-like manner. They are of a greenish-white colour, and have a singular and beautiful look.

There are two or three *varieties* of this species. The leaves of one are downy underneath; the stalks of another are brittle, and the leaves green on both sides; whilst another has its leaves of a light-green on the upper surface, and glaucous underneath: They are all low-growing plants, and seldom cultivated for use.

13. SALLOW. The Sallow is well known all over England, and delights in a dry rather than a moist soil. It is a tree rather below the middle growth. The branches are numerous, smooth, of a dark-green colour, and their chief use is for hurdle-wood and the fire; though the trunk, or old wood, is admirable for several uses in the turnery way. The leaves are oval, rough, waved, indented at the top, and woolly underneath. The katkins are very large, yellow, appear early in the spring, and are much resorted to by the bees, on their first coming out of their hives at that early season.

There is a *variety* of this species with long leaves, which end in acute points; and another with smooth leaves, beautifully striped with white, called the *Striped Sallow*.

14. OZIER is a tree of rather low growth, though the shoots grow amazingly long and strong in one year from the stools. The leaves are spear-shaped, narrow, long, acute, almost entire, of a blueish-green on their upper side and hoary underneath, and grow on very short footstalks. This is the most propagated of all the kinds for basket-making: it admits of several sorts of different value, but all are nevertheless useful to the basket-maker.

The *varieties* usually go by the names of the *Green Ozier*, the *Old Basket Ozier*, *Welsh Wicker*, &c. &c. &c.

15. GLAUCOUS WILLOW. This is a low Alpine Willow, of little use for ornament or profit. The leaves are oval, oblong, entire, of a glaucous colour, and possessed of fine hairs on their under side. The katkins are large, oval, of a white colour, and appear about the time of those of the Common Sallow.

All the SALICES may be PROPAGATED by planting the cuttings, which may be done at all times of the year, for they will grow if it is in summer; though the best season is the winter, or early in the spring, just before they begin to shoot. The cuttings should be of the last year's wood, should be in height in proportion to their thickness, and always ought to be planted in an upright position.

The method of planting an OZIER GROUND will be given under WOODLANDS.

S A L S O L A.

LINNEAN Class and Order, *Pentandria Digynia*: Each flower contains five males and two females: There are sixteen SPECIES; one only of which is adapted to our Collection:

SALSOLA Fruticosa: The SHRUBBY GLASSWORT, or the STONECROP-TREE; an evergreen shrub; native of the seacoasts of England, France, Spain, and Persia.

The STONECROP-TREE is a shrub of about four or five feet growth. It will shoot rather higher, if permitted; but is never more beautiful than when about a yard high. The branches are numerous, naturally grow upright, are covered with a grey bark, and are very brittle. As to the leaves, they are very much like the Common Stonecrop of our walls, which is well known, being narrow, taper, and fleshy like them. They are of the same light pleasant green, and the branches are stored with them in plenty. The flowers make no show; neither is there any thing that is desirable to the Gardener that succeeds them. This is a very hardy shrub; but, as we have introduced it as an Evergreen shrub, it may not be improper to give a hint or two for its being properly stationed. It should be set in a well-sheltered place; for although the leaves remain on all winter, yet our severe black frosts suddenly coming on them, when in an open exposed place, destroy them, and cause them to turn black; and although the shrub will shoot out again early in the spring, yet the black destroyed leaves will

will look very disagreeable all winter, and be as blots among others that are less subject to these disasters. One hint more may be necessary; and that is, whenever this shrub is planted, either in small or large gardens, among deciduous or evergreen trees, not to circumscribe the tree, with strings or bafs matings, in order to confine the branches and keep them closer: this will effectually destroy all the branches and leaves, if not the whole plant; for being thus closely confined, the free admission of the air will be excluded, which will cause these succulent leaves to rot and decay. This precaution is the more necessary, as their upright branches being heavy laden with such plenty of succulent leaves, are subject to be blown down from the bottom by the high winds: and as they then must of course look irregular, and may probably overspread some little plant that grows near them, it is a common thing to tie them up again to the other branches. This custom, however, ought never to be practised; but when any of them happen to be blown down in that manner, they should be taken off and thrown away.

Nothing is more easy than the PROPAGATION of the Stonecrop-tree; for it is encreased by layers, cuttings, and suckers. In short, if some of these shrubs are planted, they will soon send forth many stalks from the roots; and if the whole be then taken up, these, without any other trouble, may be divided, and will each of them be a good plant; and thus in a few years, from a plant or two of this shrub, numbers may be obtained.

S A M B U C U S.

LINNEAN Class and Order, *Pentandria Trigynia*: Each flower contains five males and three females: There are four SPECIES; three of which are here treated of; the fourth, *Sambucus Ebulus*, or Dwarf Elder, is an herbaceous plant.

1. *SAMBUCUS Nigra*: The COMMON ELDER; a *deciduous shrub or tree*; common in most parts of England, but is said to be originally a native of Germany.

C c 2

2. *SAMBUCUS*

2. *SAMBUCUS Canadensis*: The AMERICAN ELDER; a *deciduous shrub*; native of Canada, Pennsylvania, and Virginia.

3. *SAMBUCUS Racemosa*: The MOUNTAIN ELDER, or the MOUNTAIN RED-BERRIED ELDER; a *tall deciduous shrub*; native of the mountainous parts of the South of Europe.

1. The COMMON ELDER admits of many *varieties*:

The Black Elder.

The White-berried Elder.

The Green-berried Elder.

The Parsley-leaved Elder.

• The Gold-striped Elder.

The Silver-striped Elder.

The Silver-dufted Elder.

The *Common Black Elder* is too well known to require any description. It will grow to thirty feet high, with a large trunk; and in this case its wood is very valuable. The leaves and flowers have a strong and disagreeable smell, which renders it improper to be planted near buildings or walks which are much frequented; but if they could be planted singly, or a small clump of them, at a distance from any place of resort, there is no tree in the world will make a grander figure, or be more striking when in blow; for at that time they will be covered all over with large bunches of white flowers, which will assume an air of majesty at that distance, equal to any of the flowery tribe. "Neither may a few of them only be stationed in this manner; but any acute corner of the plantation, that shews itself at a distance, may end with one of these trees; for there it will display its gaudy pride when in blow, and the eyes of all be feasted by its delicious appearance, whilst the sense of smelling is no way incommoded by its strong disagreeable scent."

The *White-berried Elder* differs from the former, in that the berries are whiter; the bark, also, of the young shoots is whiter; the buds, likewise, at their first appearance, are inclined to a whiter colour; the leaves, too, are of a paler green; and the plant in general has not such a strong disagreeable scent, though it nevertheless has a proportionable share. A plant or two only of this sort is to be admitted, merely for variety; though where they are required for the sake of the berries to
make

make wine, an hedge of them may be planted, in a place that is little frequented, and they will plentifully furnish the owner with berries for his purpose.

Green-berried Elder differs, in that the berries are green; the bark, also, of the young shoots is of a darker grey than that of the White; and the buds at their first appearance have nearly as dark a colour as that of the Common Elder. We must have only a plant or two of this sort for variety; and where the berries are wanted for wine, an hedge of them may be planted in some distant place, in the same manner as those of the White sort.

The *Parsley-leaved Elder* varies in no respect from the Common sort, except in the nature of the leaves; which are laciniated in such a manner as to resemble the leaves of some sorts of parsley. These leaves occasion a wonderful variety in shrubbery-quarters among the leafy tribe, and on their account the plant is deemed worthy of a place in any Collection; though the flowers possess the same nature with the Common sort, and emit the same disagreeable scent.

The *Striped* sorts are distinguished by their different-coloured stripes; whilst the Silver-dusted kind is remarkable for leaves finely powdered or dusted over, in a pounce-like manner, causing thereby a very beautiful and striking appearance.

3. The AMERICAN ELDER is of a lower growth than any of the above sorts, seldom rising higher than eight or ten feet. The young shoots are of a reddish colour. The leaves on the lower part of the plant are trifoliate; others are composed of about two or three pairs of folioles, terminated by an odd one. These folioles are serrated, and of a pleasant green colour; neither do they emit so strong a scent as any of the other sorts. The flowers are produced in the same manner as the folioles; and are succeeded by berries of a reddish colour. Though these berries have not quite such a strong disagreeable taste as the Common Elder berries, yet they have a kind of physical flavour: nevertheless they are liked by some persons, who are as fond of them as they are of some sorts of fruit. What was said of the first sort, recommending its being planted singly, or in small clumps at a distance, will hold good in all these sorts, which when in blow will equally have the same noble appearance as that, except the American, which is of lower growth,

and consequently of less figure than the others, and as such less proper for the purpose.

3. The MOUNTAIN ELDER will grow to about ten or twelve feet high, and is a tree that is with great justice universally admired. The bark of the young shoots is of a reddish colour, and the buds in winter will be very large and turgid, and of a still deeper red. The leaves are pinnated with an odd one; their folioles are serrated; they are placed at a good distance on the mid-rib, which is pretty long; and they die to a reddish colour in the autumn. The reddish-coloured branches, with their large turgid buds, have a singular and noble look in winter amongst other trees; and in the spring, as flowering-shrubs, these trees seem to attempt to vie with any of the flowering tribe; for in April, and the beginning of May, they will produce their bunches of flowers at the ends of every joint of the last year's shoots. These bunches of flowers are of an oval figure; a figure in which compound flowers are not commonly produced. They are not, however, of so clear a white as any of the other sorts, being tinged with green; and although the tree will be covered with them, they have not the same striking appearance; but this defect is made amends for by the peculiar form which they assume, and the scarcity of the plant itself. Were there nothing but the above recited properties to recommend this shrub, it might justly claim admission in plenty into our choicest plantations: but these are not all its beauties; what remains is much more striking and engaging; for these oval bunches of flowers are succeeded by oval bunches of berries, that are of a deep scarlet colour. A crop, indeed, does not always ensue; but when it does, no tree is more singularly beautiful than this is rendered by them, chiefly occasioned by their colour and form, which any one must conceive to be delightful.

All the sorts of Elder are PROPAGATED by cuttings. These should be of the last year's shoot, and each cutting should consist of three joints; two of which must be in the ground, whilst the third is left above, to make the shoot. October is the best month for this business; and almost any soil will do, though the moister it is the better. These cuttings may be either planted very close, and removed the autumn following into the nursery-ground; or they may be planted a foot or more asunder,

der, and then they will be of a sufficient distance until they are finally taken up, which may be any time after two years. Thus easy is the culture of these plants when known.

S M I L A X.

LINNEAN Class and Order, *Diœcia Hexandria*: Male flowers containing six stamina, and female flowers containing three pistils, upon distinct plants. There are fourteen SPECIES; eight of which are as follow :

1. **SMILAX *Aspera***: The ITALIAN SMILAX, or COMMON ROUGH BINDWEED, or PRICKLY BINDWEED; *a low climber*; a native of Italy, Spain, Sicily, and France.

2. **SMILAX *Excessa***: The ORIENTAL SMILAX; *a lofty climber*; native of many parts of the East.

3. **SMILAX *Sarsaparilla***: The PERUVIAN SMILAX, or SARSAPARILLA; *a climber*; native of Peru, Mexico, and Virginia.

4. **SMILAX *Rotundifolia***: The CANADA SMILAX; *a climber*; a native of Canada.

5. **SMILAX *Laurifolia***: The LAUREL-LEAVED SMILAX; *a climber*; native of Virginia and Carolina.

6. **SMILAX *Tamoides***: The BRIONY-LEAVED SMILAX; *a climber*; native of Carolina, Virginia, and Pennsylvania.

7. **SMILAX *Lanceolata***: The LANCE-LEAVED SMILAX; *a climber*; native of Virginia.

8. **SMILAX *Herbacea***: The IVY-LEAVED SMILAX; *a climber*; native of Virginia and Maryland.

1. The ITALIAN SMILAX is possessed of a long, creeping, white, fleshy root, which sends forth many slender, angular stalks, armed with strong, short, crooked spines, and having claspers. If any thing is near for it to climb on, it will, by such assistance, arrive at the height of ten or twelve feet. The leaves are cordated, end in acute points, are of a fine dark-green colour, indented, have nine longitudinal veins, have

their edges beset with some short spines, and are placed on tolerable long tough footstalks. The flowers make no figure: They are white, and are produced from the wings of the stalks, in small bunches, in June or July; and the female flowers will be succeeded by round red berries.

'There is a *variety* of this species, which produces black berries; and from which it differs in no other respect; and which occasions its being called by Gardeners the *Black-fruited Rough Bindweed*. There is also another sort, with brown fruit.

2. ORIENTAL SMILAX is a lofty climber; for being planted near pretty tall-growing trees, it will ascend to their very tops, and proudly, by such assistance, shew itself to a great distance. The roots are thick, white, and fleshy; and the stalks are angular, and armed with spines. The leaves are of a pleasant green colour, and are nearly of a sagittated figure. They are possessed of no spines, have longitudinal veins, and their footstalks are tolerably long and tough. Their flowers are white, and are produced in small bunches, in June and July; and the females are succeeded by round red fruit in their own countries, but not with us.

3. PERUVIAN SMILAX, OR SARSAPARILLA, has also white, thick, fleshy roots. These send out angular stalks, that are armed with sharp spines; but they will not climb up trees to near the height of the former. The leaves are smooth, being unarmed with spines. They are retuse, oval, cordated, of a strong green colour, have three nerves, and grow on strong rough footstalks. The flowers are produced in small bunches, from the sides of the branches. They are of little figure; and the females are succeeded by a small, round, red fruit, where they grow naturally.

4. CANADA SMILAX has long creeping roots, which send forth round slender stalks, that are thinly guarded with sharp straight spines. The leaves are reniform, cordated, and have no spines. They are broader than they are long, have five strong nerves, and short footstalks, from each of which grow two slender clasps. The flowers are produced in small bunches, in June and July. They will be succeeded by a small berry, which will not come to perfection here.

5. LAUREL-LEAVED SMILAX has round taper stalks, that are beset with spines. The leaves are of a strong green colour, and

and a thick consistence. They have no spines, have three nerves, are of an oval lanceolate figure, and are about the size of those of our Common Bay-tree. The flowers are produced in small round bunches, in June and July, from the wings of the stalks; and these are succeeded by small black berries in the autumn. This sort is rather of a tender nature, and unless the soil be naturally dry and warm, and the situation well sheltered, they will be pretty sure of being killed in the winter.

6. BRIONY-LEAVED SMILAX has large, fleshy, white roots, which send forth round, taper, prickly stalks. The leaves are oblong, heart-shaped, have no spines, but have many veins running lengthways. Their upper surface is of a fine strong green colour, and, being tolerably large, they make a goodly show. The flowers are produced in July, in small loose bunches, and are succeeded by black berries.

7. LANCE-LEAVED SMILAX. The stalks are slender, taper, and free from prickles. The leaves are spear-shaped, pointed, and unarmed with spines. The flowers come out in small clusters, and are succeeded by red berries.

8. The IVY-LEAVED SMILAX. The stalks are angular, herbaceous, unarmed with spines, but possessed of clasps, by which they lay hold of any thing near them for support. The leaves are oval, free from spines, seven-nerved, and grow on footstalks. The flowers of this genus make no show, being possessed of no ornament except the segments of the calyx. Those of this species are very small, and are collected in small umbels. They appear in June; and are succeeded by roundish berries, which seldom ripen in England.

These sorts are all easily PROPAGATED; indeed they will propagate themselves, if a plant or two of each sort can be obtained; for they are possessed of long creeping roots, which run under the surface of the ground, and will, both near the main plant and far off, send up young ones; which being taken up in the autumn or spring, or in any time of the winter, will be good plants for use. Thus will these plants by nature furnish you soon with plants enough for your purpose, if one or two of each can be first procured, and planted in a light good soil, in proper beds prepared for the purpose, under warm hedges, or amongst trees in well-sheltered places.

S O L A N U M.

LINNEAN Class and Order, *Pentandria Monogynia* : Each flower contains five males and one female : There are forty SPECIES ; one of which, though common, claims our attention.

Solanum Dulcamara : The WOODY NIGHTSHADE, or the BITTER-SWEET ; a *ligneous climber* ; native of England and most parts of Europe.

The WOODY NIGHTSHADE. Were it not for the commonness of this plant, it would deservedly claim a principal place in our esteem, as one of those sorts that require supports to set them off ; for besides the flowers, which are of an exquisite fine purple, and grow in bunches, it has many beauties to recommend it to our observation and care. The leaves stand on large footstalks, and the upper ones are of an hastated figure. Their beautiful purple flowers will be produced in small clusters, in June and July ; and they are succeeded by oblong red berries, which will be ripe in autumn. This is the Common sort, which is of all the most beautiful, though hardly ever propagated. The *varieties* of it, however, are in great esteem with most people, and of these there are, 1. A variety with *white flowers*, which is much coveted on that account ; and although these flowers are not so beautiful as the purple ones, yet the sort being a rare plant, makes it desirable ; and this is the sort that is cultivated, and which differs in no respect from the purple, only in its white flowers, thereby pleasing the spectator by the variety it affords. 2. The next remarkable variety of the Woody Nightshade is that with beautifully *variegated leaves*. These plants are sedulously propagated for the sake of their finely-striped leaves ; so that there is scarcely a nurseryman who does not raise plenty of them for sale amongst other shrubs ; and they are so generally liked, that his disposing of them will be pretty certain. This plant, as has been observed, is only the Common Woody Nightshade with the leaves delightfully variegated, its flowers being of the same fine purple, and the fruit that succeeds them exactly the same. 3. Another variety has *thick leaves*, which are *very hairy*. This sort grows chiefly in Africa, and must have a warm situation to live through our winters.

winters. It is, however, a very fine plant, and where such a situation is not found, ought to be treated as a greenhouse-plant.

All these sorts are easily PROPAGATED by cuttings; for they will grow, if planted in any of the winter months, in almost any soil or situation, and will be good plants for removing by the autumn following. If the owner has only a plant or two of these, which he is desirous of multiplying with certainty, let him lay the young stalks upon the ground, and draw over them a little soil, and they will effectually be good plants by the next autumn; and this will be the surest way, as cuttings of most sorts, though they will for the most part take very well, are often attended with much hazard. The variegated sort must be planted upon a poor soil, or it will be in danger of running away from its colours.

S O R B U S.

LINNEAN Class and Order, *Icosandria Trigynia*: Each flower contains about twenty males and three females: There are three SPECIES:

1. *SORBUS Aucuparia*: The WILD SORB, or MOUNTAIN ASH, or QUICK-BEAM, or QUICKEN-TREE, or ROAN-TREE; a deciduous tree; native of England and most of the northern parts of Europe.

2. *SORBUS Domestica*: The CULTIVATED SORB, or SWEET SERVICE; a deciduous tree; native of the south of Europe.

3. *SORBUS Hybrida*: The MONGREL SORB, or SEMI-PINNATED SERVICE; a deciduous tree; native of Gotlandia.

1. The WILD SORB, or MOUNTAIN ASH. Although we generally see this species in a shrubby underwood state, it will nevertheless, if properly trained, grow to a tree of the middle size. It has no claim to the appellation of Mountain Ash, except some distant resemblance of the common Ash in the formation of its leaves. The flowers of this tree have a pleasing effect in the spring, and its berries, in autumn and winter,

winter, render it highly *ornamental*. EVELYN enumerates its *uses*: he says, “ besides the use of it for the husbandman’s tools, goads, &c. the wheel-wright commends it for being all heart. If the tree be large, and so well grown as some there are, it will saw out into planks, boards, and timber. Our fletchers commend it for bows next to yew, which we ought not to pass over, for the glory of our once English ancestors: In a statute of Henry VIII, you have it mentioned. It is excellent fuel; but I have not yet observed any other use.” HANBURY follows him, and places the Mountain Ash among his forest-trees. Its wood is undoubtedly pliable and tough. Its shoots, from the stool, are generally numerous, straight, and long. In the north of England the husbandmen use them for whip-stocks to drive their teams with. For stakes, edders, and perhaps for hoops, no wood is better adapted than the Wild Sorb; and as an UNDERWOOD it seems well worth the planter’s notice.

THE PROPAGATION OF THE NATIVE SORB is from seeds or by layering. Having procured a sufficient quantity of berries, they should be sowed, soon after they are ripe, in the seminary, about half an inch deep, in beds made as has been before directed. They frequently lie till the second spring before they make their appearance; and, in the spring following, may be planted out in the nursery. We need not repeat that the seminary should be kept clear of weeds, and that the young plants in dry weather now and then ought to be refreshed with water; neither need the gardener be reminded, that after they are planted in the nursery way, digging the ground in the rows must be observed every winter, taking off all shoots also which would make the tree forked, and keeping the weeds hoed in the rows, till they are of sufficient size to plant out where they are intended to remain.

This species will take very well from *layers*; so that whoever cannot procure the berries, and has a few of these trees, may cut them down close to the ground, when they will throw out many stools; and if the year following these are laid in the ground in the same manner as carnations, they will have taken good root in one year. But trees cultivated this way will not grow so straight and handsome, neither will they arrive at so great a magnitude as those raised from the seeds.

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The Quicken-tree will grow upon almost any soil, either strong or light, moist or dry. It flourishes both on the mountains and in the woods; it is never affected by the severity of the weather, being extremely hardy; and if even planted on bleak and exposed places, it grows exceedingly well.

2. The CULTIVATED SORB, or SWEET SERVICE, is so distinguished from the other, because it produces eatable fruit, which in France, Italy, and other parts, is served up in desserts; and the tree is cultivated there solely on that account. It will grow to be larger than the Quicken-tree; and in many respects is superior in beauty to most trees. It will grow with an upright stem; and the young shoots in the summer are so downy as to appear covered with meal. In the winter they are inclined to a purplish colour, and are spotted all over with whitish spots; the buds at the ends of them will be turgid, preparing for the next year's shoot. The leaves resemble those of the Quicken-tree; they are finely pinnated, and composed of seven or eight pair of lobes, which are terminated by an odd one. They are broader than those of the Quicken-tree, serrated in a deeper and more irregular manner, and their under surface is of a much more downy nature. The flowers are white, grow in umbels, come out in May, and are succeeded by an agreeable fruit, which is large, fleshy, and of various shapes in the different varieties.

3. The MONGREL SORB. This seems to be a mongrel, between the Quicken-tree and *Aria*. It is an upright-growing tree, and the young branches are of a whitish colour. The leaves are very downy, and pinnated at the base; but the upper lobes join together, thereby forming a half-pinnated leaf. The flowers are white, grow in umbels, and are succeeded by bunches of roundish berries, which will be ripe in the autumn.

The PROPAGATION of the Wild Sorb has already been given; and that culture will serve for all the sorts: but in order to have good fruit of the Sweet-Service-tree, the best sorts should be grafted or budded upon pear or quince-stocks.

These trees are very hardy, for they will grow in almost any soil; though they make the swiftest progress, and arrive at the greatest height, in a moist situation.

S P A R T I U M.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female; the males being divided into two sets at the base: There are sixteen SPECIES; seven of which are proper for our collection:

1. SPARTIUM *Scoparium*: The COMMON ENGLISH BROOM; a *deciduous shrub*; native of England, and the southern parts of Europe.

2. SPARTIUM *Junceum*: The SPANISH BROOM; a *tall deciduous shrub*; native of Spain, Portugal, and some parts of Italy and Sicily.

3. SPARTIUM *Radiatum*: The STARRY BROOM; a *low deciduous shrub*; native of Italy.

4. SPARTIUM *Monospermum*: The SINGLE-SEEDED BROOM; a *deciduous shrub*; native of the barren parts of Spain.

5. SPARTIUM *Angulatum*: The EASTERN BROOM; a *deciduous shrub*; native of the East.

6. SPARTIUM *Spinosum*: The THORNY BROOM, or PRICKLY CYTISUS; a *tender deciduous shrub*; native of the sea-coasts of the southern parts of Europe.

7. SPARTIUM *Scorpius*: The PRICKLY BROOM; a *deciduous shrub*; native of Spain and the south of France*.

1. The ENGLISH BROOM will grow to be about six feet high. The branches are very flexible and numerous; they are angular; and the bark with which they are covered is of a delightful green. The leaves are both trifoliate and single, the lower part of the branches producing the former, the upper part the latter. The flowers are large, and produced in May, all along the sides of the last year's shoots, from the bottom to the top. They stand upon short footstalks, and so ornament each twig of which the whole shrub is composed, that they have a look grand beyond most of those of the flowery tribe. These flowers are succeeded by compressed pods, containing kidney-shaped seeds, all of which are very well known.

* For another Class of Brooms see GENISTA.

2. SPANISH BROOM. There are two notable *varieties* of this species: Common Spanish Broom, Double Spanish Broom.

Common Spanish Broom is a fine plant, and has been much sought after as a flowering-shrub. It will grow to be ten feet high. The branches are taper, placed opposite, and covered with a smooth green bark. The leaves, which are not very numerous, are of a spear-shaped figure, and, like the twigs, of a fine green colour. The flowers are produced at the ends of the branches, in loose spikes, in July; and there will be a succession still kept up, at the end of each spike, often until the frost puts a period to their blowing. The flowers of this sort, also, are succeeded by compressed pods, which contain kidney-shaped seeds, which often ripen in the autumn.

The *Double Spanish Broom* differs in no respect from the other, except that the leaves are very double. The manner of growing, colour of the shoot, and nature of the leaves, are exactly the same; and it produces very full double flowers; but these flowers do not come out so early as the single sort, it being often September before any of them will be in blow; and the succession will be continued so slowly, that sometimes not more than two or three flowers on a spike will be fully out before the frosts nip them from any further blow. This sort is succeeded by no seeds.

3. STARRY-BROOM is a low plant, seldom growing more than a yard high, even when it has the advantage of culture; in the places of its natural growth, two feet it seldom aspires to. Notwithstanding the low growth of this shrub, however, it will occupy a large space of ground in proportion to its size, for it extends its flexible branches all around to some distance. The branches of which it is composed are very narrow, angular, and grow opposite by pairs. The leaves are trifoliate, grow opposite to each other, and the folioles are awl-shaped, placed opposite, and spread out in such a manner as to resemble the rays of a star, which occasions its being so called. The flowers are produced in June and July, at the ends of the branches: they will be in a kind of small clusters or spikes, are of a bright-yellow colour, and of the same figure with the former, but proportionally smaller. They are succeeded by short hairy pods,

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in which are a few kidney-shaped seeds, which will be ripe in August or September.

4. **SINGLE-SEEDED BROOM.** The *varieties* of this species are, the Common Yellow, and the White-flowered.

The *Common Single-seeded Broom* is a plant about six feet in growth. Its branches, which are very numerous and tough, are angular; and the leaves, which are not very many, are of a lanceolated figure. The flowers are produced in bunches from the sides of the branches. These bunches are small; but being of a fine deep-yellow colour, and also being in plenty all over the shrub, give it a beautiful look. This shrub blows in July; and the flowers are succeeded by short pods, each of which contains a single seed only, which seldom ripens in England.

White-flowered Single-seeded Broom, which is also called the *White Spanish Broom*, is of a more tender nature than the former sort; yet not so tender but that it will thrive abroad with us, in any dry soil and well-sheltered situation, if the winters are not too severe. After this precaution, we would advise the gardener not to venture his whole stock of these plants abroad, lest a severe winter should take them all off; but to have a few planted in pots, and set under shelter, that, in case the others should be killed, a share of these may supply their places. The *White Spanish Broom*, then, will grow to about eight feet high; and the branches are numerous, slender, and tough. Their bark is of a whitish colour, and they are taper, almost like a rush. The leaves, which are not many, are of a lanceolated figure. The flowers are white, come out in clusters from the sides of the branches in July, and are succeeded by short pods, each of which contains one single seed only.

5. The **EASTERN BROOM** will grow to about six or eight feet high. The branches of this, also, are numerous, slender, and tough. They are rather of a singular structure, each of them affording six angles. The leaves, which are few, are of different figures, some being found single only, whilst others are trifoliate. The flowers are produced in July, at the ends of the branches, in a kind of spikes. They are of a paler yellow than most of the other sorts, and are rarely succeeded by seeds with us.

6. **PRICKLY**

6. **PRICKLY CYTISUS**, or **THORNY BROOM**, has scarcely any business in this place, being generally reared as a greenhouse plant; but as it will bear our moderately mild winters in a warm soil and situation, with this caution it may be introduced. It is about six feet in growth; and the branches are numerous, slender, tough, angular, and armed with long spines. The leaves are trifoliate; and the flowers are produced in clusters, in June, at the ends of the branches. They stand on long footstalks, are of a bright yellow, and make a good figure. They are succeeded by short hard pods, which contain a few seeds of the same figure with the others.

7. **PRICKLY BROOM**. The stalk of this species is woody, and sends forth several slender, prickly branches, which spread themselves every way. The leaves are oval, smooth, and in some varieties hairy. The flowers are moderately large; and some are of a deep-yellow colour, whilst others are pale. They appear in July; and are succeeded by short pods, containing the seeds, which seldom ripen in England.

All these sorts of Broom, the Double-blossomed excepted, are to be PROPAGATED from seeds; and one method may be observed for all the sorts. The sorts that ripen their seeds in England are supposed to be ready at hand; the seeds of the others must be procured from the places where they grow naturally. The first week in April is the best time for sowing the seeds; and this should be either in drills, or on beds, half an inch deep. It will not be long before the plants appear; and as the hot weather comes on, they should be shaded from nine o'clock in the morning till within an hour of sunset. Watering and constant weeding must be given them; and this is all the trouble they will require in summer. The reader will perceive our Common Broom to want none of this care; neither will the Common Spanish Broom need much of it; it is to be afforded those only which are less common, that we may be more certain of a plentiful strong crop. In the spring all these seedlings are to be taken up, and pricked out in the nursery-ground, a foot asunder, and two feet distant in the rows. This work must be done when they are one year-old seedlings; because they naturally send down a strong tap-root,

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which, if deferred longer, will be grown so big as to endanger the growth of the plant. After they have stood in the nursery ground two years, they will be good plants for setting out where they are to remain. Thus may all the sorts of *Spartium* be raised by seeds; though it will be highly proper to have particular regard to the situation of the tenderer sorts; such as the White Spanish Broom, the Oriental, and the sorts called the Prickly *Cytisus* and Prickly Broom. These may be raised the same way; but the soil and situation must be naturally warm and well-sheltered, and the beds should be hooped to be covered with mats in frosty weather; otherwise the whole crop will be in danger of being lost the first winter. In the spring they may be planted, some in pots (to preserve the sorts), others in the warmest places of the shrubbery. Another method will not be improper to be followed in raising the tenderer sorts; namely, by sowing them in pots in April, and plunging them in a shady border up to the rim. At the approach of the first frost, they may be removed into the greenhouse, or placed under some shelter, when they will be effectually preserved until the spring; then they should be turned out, and planted in separate pots, which should be plunged in a shady border, and removed under cover in the winter. By thus protecting them for a winter or two, they will get stronger, and be able to resist the cold; and then a share may be planted out in the warmest situation, whilst the others may be removed into larger pots, to be kept, if wanted, as greenhouse-plants.

S P I R Æ A.

LINNEAN Class and Order, *Icosandria Pentagynia*: Each flower contains about twenty males and five females. There are nineteen SPECIES: six of the ligneous kind are here treated of:

1. *SPIRÆA salicifolia*: The COMMON *SPIRÆA FRUTEX*, or the Willow-leaved Spiræa; a low deciduous shrub; native of Siberia and Tartary.

2. *SPIRÆA*

2. *SPIRÆA Tomentosa*: The RED-FLOWERING SPIRÆA; a *low deciduous shrub*; native of Philadelphia.

3. *SPIRÆA Hypericifolia*: The HYPERICUM-LEAVED SPIRÆA, or HYPERICUM FRUTEX; a *deciduous shrub*; native of Canada.

4. *SPIRÆA Crenata*: The SPANISH SPIRÆA; a *low deciduous shrub*; native of Spain and Siberia.

5. *SPIRÆA Opulifolia*: The GELDER-ROSE SPIRÆA; a *deciduous shrub*; native of Virginia, Canada, and Carolina.

6. *SPIRÆA Sorbifolia*: The SERVICE-LEAVED SPIRÆA; a *low deciduous shrub*; native of moist land in Siberia.

1. The COMMON SPIRÆA FRUTEX rises to about four feet high. The root is spreading; so that besides the common stalks which send forth branches, others are produced from the roots called Suckers, which by the autumn will be as high or higher than any of the whole plant. The bark on all these is smooth, and of different colours; that on the old stalks is red, though for the most part clouded with a dusky matter: The young shoots that grow from these stalks are lighter, though nevertheless of a reddish tinge; whilst the bark on the summer shoots, that sprung from the root, are nearly white. The leaves of this species are of a fine green, and grow without order on the branches. They are spear-shaped, obtuse, naked, and their edges are serrated. The flowers are produced in June, at the ends of the branches that grow from the main stalk; and before these have done blowing, the suckers that arise from the roots will exhibit their flower-buds at the ends. These are generally larger and fairer than those that were before in blow; and by these suckers a succession of flowers is often continued even until late in the autumn. The flowers are produced in double-branching spikes, which are larger downwards, diminish gradually, and end with an obtuse spike at the top. They are of a pale-red colour; and though separately each flower is small, yet being produced in these thick spikes, four or five inches long, they have a good look. These flowers, with us, are succeeded by no ornamental seeds. The vigorous shoots

of this shrub that arise from the roots are very tough, pliable, and taper, and make good riding-switches.

2. The RED-FLOWERING SPIRÆA will grow to the height of about four feet; and the branches are covered with a purple bark. The leaves grow on these without order: they are of an oval, lanceolated figure, and unequally ferrated. Their upper surface is of a fine green colour, but their under is downy: the stalks, also, are possessed of a good share of this mealy kind of matter. The flowers are produced in July, at the ends of the branches, in double-branching spikes, like the former; and being of a bright-red colour, make a fine appearance.

There is a *variety* of this species, with white flowers.

3. The HYPERICUM-LEAVED SPIRÆA, or HYPERICUM FRUTEX, will grow to the height of about five or six feet, and has beauty and elegance beyond description; not so much from its natural form of growth, or the colour of the bark or leaves, as from the flowers; for the branches are produced irregularly. The older shoots are covered with a dark-brown bark; the younger shoots are smooth and lighter, and are tinged with red. The leaves are small, though of a pleasing dark-green colour; they are produced irregularly on the shrub, and have their edges entire. The flowers are produced in May, almost the whole length of the branches: they are of a white colour; and though each flower is separately small, yet they are collected in umbels that sit close to the branches, which being thus ornamented their whole length, scarcely any thing but flowers, besides the main stalks, are to be seen; so that the shrub has the appearance of one continued flower, branched out into as many different divisions as there are twigs; for every twig at a little distance will look like a long narrow spike of flowers; and these being all over the shrub, of a pure white, the show they then make is delightful.

4. SPANISH SPIRÆA will grow to be about four feet high; and the branches, which are produced irregularly, are covered with a dark-brown bark. The leaves are small, of a pleasant
green

green colour, and serrated at their ends. The flowers are produced from the sides of the branches, in May; they grow in roundish bunches, are of a whiter colour than, and being produced nearly the whole length of, the branches, make a charming show, like the preceding sort; from which this appears very little to differ, without being strictly examined.

5. *GELDER-ROSE SPIRÆA*. Of this species there are two varieties, called, *Virginian Gelder-rose*, and *Carolina Gelder-rose*.

Virginian Gelder-rose will grow to be seven or eight feet high. The branches are covered with a dark-brown bark, which peels off in the winter, and discovers an inner, which is smooth, and of a lighter colour; so that in winter this shrub has a very ragged look. The leaves resemble those of the common currant-bush, which has occasioned its being called by some the *Currant-leaved Gelder-rose*. They are for the most part lobed like them; though all the leaves will not be alike, some being divided into more than three lobes, whilst others are scarcely divided at all. They are serrated at their edges, are of a palish-green colour, and placed irregularly on the branches, on long green footstalks. The flowers are produced in June, at the ends of the branches: they are white at their first opening, and afterwards receive a reddish tinge, which is still heightened before they die off. Each flower separately is rather small; but many of them grow together, each having its separate footstalks, in large umbels. The beauty of the Common Hawthorn is known to all; and it may not be amiss here, as the simile is just, and that the Reader may have a true idea of the flowers, to mention, that each flower separately has the appearance of a single flower of the Hawthorn, and that they are produced in bunches. These flowers are succeeded by the same kind of bunches of reddish, cornered fruit, which causes a pretty variety in the autumn.

Carolina Gelder-rose differs very little from the former sort. The branches are covered with the same kind of falling bark; though the leaves are not lobated in the same manner; for these will be of different shapes; yet most of them are nearly

oval, but end in points, and are all unequally serrated round their edges. The flowers of this sort, also, are white, but grow in rounder and smaller bunches than the other. They are succeeded by the like kind of cornered fruit, which is of a reddish colour in the autumn.

6. SERVICE-LEAVED SPIRÆA is a shrub of very low growth ; a yard is the highest we ever yet knew it arrive to. The young branches are covered with a purplish bark. The leaves are beautifully pinnated, so as nearly to resemble those of the Service-tree. The folioles are oblong, and generally about four pair in number : they are uniformly serrated, and exceedingly ornamental to the shrub. The flowers are white, and produced at the ends of the branches, in July, in panicles. They are seldom succeeded by seeds in England.

The PROPAGATION of all the sorts is very easy. It may be done by cuttings ; for if the strongest parts of the shoots of the last summer's growth be planted in October, in a shady border, most of them will grow, and become good plants by the autumn ; so that by the autumn after that, they will be very proper plants to be set out to stand. But if a person has only a plant or two of a sort, from which he can get but a very few cuttings, the best way is to layer them, and not hazard their growing this way ; for although they will take freely, yet (says HANBURY) by some unseasonable weather, I have known whole crops of *cuttings of all sorts* to fail. Thus, of the many thousand cuttings of all sorts I planted in the winter preceding the dry summer in 1762, very few grew ; for although they were shaded and watered, and others planted in shady borders, yet such large cracks and chafms would open among them (as they did almost all over my plantations) as to cause watering to be of no service ; nay, the more I watered them, the harder the mould set, and the chafms became greater ; and notwithstanding many of the cuttings were planted in parts that were possessed of a natural moisture, yet the crevices there were larger, and the ground harder ; and all attempts to prevent it seemed to be in vain. Though this is the nature of the soil of few nurseries, I mention this to shew, that there is an hazard in planting of cuttings, unless the season should prove good ; for this turn

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I had scarcely any grew : so that whatever trees will grow by cuttings, if a gentleman has only a plant or two, and wants to have them encreased, the best way is to do it by layers ; and hence, of all *the sorts before-mentioned*, if the twigs be but laid in the ground in the autumn, they will have good roots by the autumn following, many of which will be plants strong enough to be planted in the shrubbery, whilst the weaker may be set in the nursery-ground for a year or two, to gain strength. Some of these sorts will throw out suckers, which will be good plants when taken up : nay, the first sort will propagate itself fast enough this way ; for after it has stood a year or two, it will throw them out so vigorously, as has been before observed, that in one summer they will grow to be as high as the whole plant, and will have fair flowers at their ends in the autumn. And here the Gardener must observe, that after this sort is planted in the shrubbery, the suckers must be constantly cleared off the old plants every winter, otherwise they will soon be so numerous and close, as to lose that beauty which always attends plants that arise with single or with few stems.

S T A P H Y L Æ A.

LINNEAN Class and Order, *Pentandria Trigynia* : Each Flower contains five males and three females : There are two SPECIES :

1. *STAPHYLÆA Pinnata* : The COMMON STAPHYLÆA, or BLADDER-NUT ; a *deciduous shrub* ; native of many parts of Europe.

2. *STAPHYLÆA Trifolia* : The TRIFOLIATE STAPHYLÆA, or BLADDER-NUT ; a *deciduous shrub* ; native of Virginia.

1. The COMMON STAPHYLÆA will grow to be eight or ten feet high. The older branches are covered with a brown bark ;

that on the younger shoots is of a much lighter colour. The bark is exceeding smooth; the twigs are very pithy, and when broken have a very strong scent. The buds will be turgid and large early in winter, as if ready to burst out of their stipulæ, and begin their shoots; this causes the plant at that season to have an air of health and verdure, which of course must then be very pleasing. The leaves are pinnated, of a light-green colour, and, like all others of that nature, are very ornamental. They consist of two pair of folioles, that are terminated with an odd one; which occasions this sort being frequently called the Five-leaved Bladder-Nut. These folioles are tolerably large; oblong, pointed, and stand on pretty long footstalks. The flowers are produced in long pendulous bunches, from the wings of the leaves; and are white. The buds appear in the spring, almost at the first dividing of the stipulæ, though they will not be in full blow until May. These flowers are succeeded by large inflated bladders, in which the seeds are contained, and have a very striking and singular look in the autumn. The nuts of this tree are smooth, and said to be eaten as food by the poor people in some countries. They are also used by the Catholics, who compose some of their rosaries of them.

2. The TRIFOLIATE STAPHYLÆA grows to about the same height with the former. The elder branches will be besprinkled, as it were, all over with greyish spots. The bark on the younger branches is perfectly smooth, and of a yellowish colour. The buds will be swelled early in the winter, though they will not be so large and turgid as those of the former sort. The leaves are trifoliate, and grow by threes on a footstalk; which has occasioned this plant being distinguished by the name of Three-leaved Bladder-Nut. They are of a light-green colour; and the folioles are generally pretty large, oval, pointed, and serrated at their edges. The flower-buds appear at the first beginning of the buds to open in the spring; which has been known to be sometimes so early as January; though the flowers will not be in full blow until May. These flowers, like the former, are produced from the sides of the branches, in long pendulous bunches: their colour is white; and they are succeeded by large inflated bladders, in which the seeds are contained. The seeds of both species ripen well in England.

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These species may be PROPAGATED by seeds, layers, or cuttings. 1. The seeds should be sown, soon after they are ripe, in the autumn, three quarters of an inch deep, in almost any sort of common garden-mould made fine. In the spring some share of the plants will appear; though you must not expect the whole crop until the second spring following: nay, if the sowing of the seeds is deferred until the spring, scarcely any of them will come up until the spring after. All the summer the beds must be kept clear of weeds; and if it should prove dry, a gentle watering should be given the young plants, which will encrease their growth. The spring after the remainder of the crop will come up; and the business of weeding must be continued that summer. In the autumn the two-years-old plants should be drawn out and planted in the nursery, a foot asunder, and two feet distant in the rows; and in the beginning of March the one-year-old seedlings should be taken up, and planted in the same manner. The reason of deferring the planting out of the younger seedlings is, that, being small when planted out in autumn, they are often thrown out of the ground by the frost, and many of them lost; whereas, of larger plants there will be little danger. After they have stood two or three years in the nursery, they will be good plants for any places where they are wanted. 2. These shrubs may also be propagated by layers; and this must be performed in the autumn, on the shoots of the preceding summer, by slitting them at a joint, and laying them in the ground. The making of this slit will be necessary, or at least the well breaking of the bark; otherwise they will not strike root; and if this be done with judgment, they will have good roots by the autumn following, many of which will be good plants, and fit for the shrubbery; whilst the weaker may be planted in the nursery-ground for a year or two, to gain strength. One caution is to be observed: If the layering is to be performed by twisting the young shoots so as to break the bark, be careful not to over-do this; for being very pithy, it will kill them to be much twisted; and if the bark is not well broke, they will not strike root this way. 3. These trees are to be encreased also by cuttings; from which they will grow very well. The cuttings must be the bottom part of the last summer's shoot, which should be planted

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in October, in a shady border of light earth. If the spring should prove dry, give them some watering, and there will be little fear but that most of them will grow.

S T E W A R T I A.

LINNEAN Class and Order, *Monadelphia Polyandria*: Each flower contains many males, and five females; the males being joined in one set at the base: There is only one SPECIES:

STEWARTIA *Malacodendron*: The STEWARTIA; a *deciduous shrub*; native of Virginia.

The STEWARTIA is a shrub of about eight or ten feet growth with us, and the branches, which are produced irregularly from the sides of the main stem, are covered with a brown bark. The leaves are placed alternately on the branches, and are of much the size and make of those of the Cherry-tree. Their upper surface is of a fine green, though they are lighter and hairy underneath, and have their edges most acutely serrated. In the beginning of June this tree will be in blow. The flowers are produced from the sides of the branches: they are white, and seem to be composed of five large oval petals; but upon examining them to the bottom, we find them joined at the base. The flowers have a genteel look, are possessed of an air of delicacy; and this being at present a very scarce plant, makes it more valuable. It was named *Stewartia* in honour of the right hon. the Earl of Bute, as a compliment to his great skill in the science of botany.

This Plant is PROPAGATED by layers and seeds. 1. The young shoots should be layered in autumn, by making a slit at the joint, as is practised for Carnations. In the spring, a tall hedge of some kind should be made on the south side of them, bending also a little towards the east and west, that they may be shaded all the summer. In dry weather they should be watered; and then they should remain until the March following, when they should be examined to see if they have struck root; for sometimes they will strike root pretty freely, if so shaded and watered;

watered; and sometimes they have disappointed our expectations after waiting two years; though cuttings will sometimes grow. In March, however, a sufficient quantity of pots must be provided, filled with good garden-mould, mixed with a share of drift-sand; and the layers should be taken up, whether they have struck root or not, and planted in these pots, which must be plunged up to their rims in a bark-bed. Those layers that have no roots will have the parts ready for striking, and this assistance will set them all forward; so that in a very little time they will become good plants. They must be hardened as soon as possible to the open air. For this purpose the pots should be taken out of the beds, and plunged up to the rims in a shady place; and though these are hardy trees, it will be proper to take the pots up, and remove them into the greenhouse, or under some shelter, for the first winter. At the latter end of March they may be turned out of the pots, with their mould, into the places where they are wanted to stand.

2. Another method of propagating these plants is from seeds, which we receive from abroad. These should be sown in pots of light earth, about half an inch deep, and the pots should be plunged up to the rims in a bark-bed; where all the advantages of heat, water, and shade, must be afforded them; for without these requisites, it is not often that they will grow.

S T Y R A X.

LINNEAN Class and Order, *Decandria Monogynia*: Each flower contains about ten or twelve males, and one female: There is only one SPECIES:

STYRAX Officinalis: The STORAX-TREE; a tall deciduous shrub; native of Italy, Palestine, and Syria.

The STYRAX, in its native places of growth, will arrive to be more than twenty feet high; with us, twelve or fourteen feet is the height we may expect it to grow to. The branches are covered with a smooth greyish bark; and the younger shoots are of a reddish colour. The very wood of this tree is finely scented; and in Turkey and other places where it naturally grows,

grows, that fragrant resin called Storax exudes from its trunk, an incision being first made. The virtues of this resin are well known, and the tree is rendered valuable on that account. The leaves which ornament the slender branches, that are produced without order all around, are of a moderate size, and of an oval, pointed figure. Their edges are a little waved, though free from serratures. They grow on short footstalks, without any order, being sometimes by pairs, sometimes singly, producing a pleasing irregularity. They a little resemble the leaves of the quince-tree, and are of two colours; their upper surface is of a lucid green, but their under is hoary; and this difference of colours makes a good contrast, especially when waving with the wind, on this charming sweet-scented tree. The flowers are produced in June, from the sides of the branches, in bunches; seven or eight flowers will constitute a tuft. Their form and colour somewhat resemble those of the orange-tree, and their odours are diffused all around. These flowers are succeeded by no fruit with us; so that the height of its beauty is when it is in full blow.

The PROPAGATION is from seeds, which we receive from abroad. These must be sown an inch deep, in pots of light sandy earth, which pots should be plunged in a shady well-sheltered place, there to remain until the second spring after sowing. In March the seeds will be ready to sprout; and to assist them, it will be necessary to take up the pots, and set them up to the rims in a hot-bed. When the plants come up, all convenient air must be given them; often water; and they should be hardened soon to the open air. They should be then set abroad in the shade, and in the winter should be removed into the greenhouse, and placed under shelter. In the spring it will not be necessary to force them a second time in the hot-bed; for if the pots are set in a shady place up to the rims, and now and then a little watering afforded them, the plants will grow very well, and make good shoots that summer. Like greenhouse-plants, at the approach of winter, they must be removed into shelter; and in spring they must be shook out of these larger pots, and each planted in a separate smaller pot; and being well watered, if they are plunged into a hot-bed, it will set them growing finely. After they have had help this way,

way, they must be soon hardened, and the pots taken up, and set up to the rims in mould in a shady place. In winter they should be placed in the greenhouse as before; and this method must be continued for six or eight years, treating them exactly as hardy greenhouse-plants, and shifting them into fresh pots, as their encrease of size by growth requires. By this time they will be woody and strong; and may then, the beginning of April, be turned out of the pots, with the mould, into the places where they are designed to remain. If the soil be naturally dry and warm, and the place well sheltered, nothing but very severe frosts will injure them, especially after having stood a winter or two.

S Y R I N G A.

LINNEAN Class and Order, *Diandria Monogynia*: Each flower contains two males and one female: There are only two SPECIES:

1. *SYRINGA Vulgaris*: The COMMON LILAC; a tall deciduous shrub; native of Egypt.

2. *SYRINGA Persica*: The PERSIAN LILAC; a deciduous shrub; native of Persia.

1. The COMMON, or EGYPTIAN LILAC. The varieties of this Species are,

The Purple Lilac,

The Blue Lilac,

The White Lilac,

The Purple Lilac generally rises to the highest size of any of the three sorts, though the height of all of them is either greater or less, according to the soil in which they are planted. The Purple, in good, light, rich earth, will grow to be sixteen or twenty feet high; and the others, in the same sort of mould, nearly

nearly as high. The Purple Lilac is naturally of an upright growth, though it soon divides into branches; and these also, as the tree grows older, into others, all of which are covered with a smooth brownish bark. All winter the plant has a bold and healthy look, occasioned by the large and turgid purplish buds, which will have begun to swell early the preceding summer, and which will burst forth into leaf soon in the spring following. The leaves are large and smooth, and of a pleasant dark-green colour. They are of an oval, cordated figure, end in acute points, and grow opposite by pairs on the branches. The flowers will be produced in May, at the end of the same spring's shoot, in very large and almost conical bunches. They are of a purplish colour, are closely placed, and the number of which each bunch is composed is very great. "I have measured a bunch of them, says HANBURY, a foot long; and can any thing be thought to excel such a profusion of flowers, in its aggregate state, of which each cluster is composed! But many of these flowers appear all over the tree, mixed in an easy manner among the delightful leaves! some peeping as it were above them, and several reclining their tops, to make the appearance still more free and easy. The value of these flowers is still heightened by their delightful fragrance; and when their blow is over, which it will be in a fortnight or three weeks, they have paid us their tribute, except what they afford from their leaves and manner of growth; for they are succeeded by seed-vessels, of such a colour and nature as none but the curious botanist can find any pleasure in observing."

The *Blue Lilac* differs in no respect from the Purple, except that the branches are rather more slender and less erect, and that it seldom rises higher than twelve or fourteen feet. The branches are covered with a smooth brownish bark; and the buds in the winter will be turgid like the former, though smaller; and they, as well as the young shoots, will have a blueish tinge. The leaves are exactly like the preceding sort, though they will have a cast of blue. The flowers are produced in May, in not quite such large bunches as the former sort; the bunches will be also loose. They are of a fine blue colour, and admirably scented; and the preference is to be given with justice to neither of these trees.

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The *White Lilac* seems rather a stiffer plant than the Blue, and the branches grow more erect than any of the sorts. The young branches are covered with a smooth light-coloured bark; and in winter the buds, which will be large and turgid, are of an herbaceous yellow colour, by which this sort at that season may be easily distinguished from the others. The leaves are of the same figure and nature, though their colour is lighter, thereby making a variety. The flowers are of a fine white colour; and are produced in the same kind of large close panicles as the others, which stand upright. They are very fair, and, in the bunches, are set very closely together, which causes them to be more erect than either of the two former sorts. Thus may any person who has never seen these trees form an idea of their beauty when in blow; which will be very early, when the plants are small; for they will begin flowering at the height of four or five feet, and will every year after afford greater plenty of flowers as they advance in growth. The bunches generally grow by pairs, two at the end of the same spring-shoot, though of unequal size, the one being generally much larger than the other.

2. The PERSIAN LILAC. The varieties of this species are :

- The Common Persian Lilac (or Persian Jasmine),
- The White Persian Lilac,
- The Blue Persian Lilac,
- The Cut-leaved Persian Lilac.

The *Common Persian Lilac* seldom grows higher than five feet, and is deemed a most delightful flowering-shrub. The branches are long, slender, flexible, and covered with a smooth brownish bark, with a blueish tinge, on which are often several yellowish punctures. The buds will be large and turgid in winter; and the leaves and flower-buds will come out early in spring. The leaves are of a lanceolated figure, of a fine green colour, and grow opposite by pairs on the branches. The flowers will be in full blow before the end of May. They are of a blueish colour, and are produced in the same kind of panicles as the other sorts, though they will be smaller and looser. Their odour is more heightened than that of the others; and the shrub, on the whole, is very valuable, though now pretty common. The long flexible

flexible branches have a natural tendency to hang downwards; and when in blow their bunches of flowers will greatly encrease this tendency; on which account it will be proper to place a few sticks to support them, which may be disposed in such a manner as to escape notice, unless by the nicest examiner; and this will be proper, as the seeing the branches tied to sticks in full view, would shew a degree of stiffness which would not look well.

White Persian Lilac will grow to the same height with the former. The leaves, buds, and shoots are of a lighter colour. It produces its flowers at the end of May, in the same kind of panicles as the other (though these are of a white colour) and possessed of the same heightened odour.

Blue Persian Lilac differs from the preceding, in that the flowers are of a deep blue colour, thereby causing a pleasing variety on that account.

Cut-leaved Persian Lilac affords the greatest variety by its leaves; though the bark is rather darker, and the twigs seem slenderer, and are still more pendulous than the other sorts. The leaves of this sort are divided, almost to the mid-rib, into an uncertain number of segments; and as this occasions them to have a different, an unfrequent and a singular look, the value of the plant is much heightened on their account; particularly as it is in no respect diminished in the elegance and fragrance of its flowers.

The best way of PROPAGATING all these sorts is by layers; for if this work be performed in autumn, on the young shoots, they will be good plants by the autumn following. This method is particularly to be preferred in the three first sorts of Lilacs, as they naturally throw out such plenty of suckers as to weaken, unless constantly taken off, and diminish the beauty of the mother-plants. Plants raised by layering will be less liable to throw out suckers, and consequently will be more valuable. The common way, indeed, is to take up the suckers, and plant them in the nursery for a year or two, and then set them out finally; but these plants will not be so valuable as the others, as they will be more liable to produce suckers, which to the gardener, when he has got a sufficient stock of plants, become very troublesome.

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The Persian sorts being less liable to put up suckers, may not only be encreased by layers; but when they do throw out any, the suckers may be taken up, and deemed good plants. Cuttings of these sorts, also, planted in August, in a shady moist place, will often grow.

The Persian Lilacs never produce seeds with us, but the first three sorts do; and by these the plants may be encreased; which also is a good method. The seeds ripen in the autumn; and in October they should be sown. They are rather small; and therefore the mould of the beds should be very fine, and they should be covered over lightly. In the spring they will come up, and will want no other care than weeding. In the spring following they may be planted in the nursery, a foot asunder, and two feet distant in the rows; and here they may stand two or three years, when they will be of a proper size to be finally planted out, and will flower in a year or two after. The differences of all these three sorts are generally permanent from seeds; so that a person may sow them with reasonable hopes of obtaining the sorts the seeds were gathered from.

T A M A R I X.

LINNEAN Class and Order, *Pentandria Trigynia*: Each flower contains five males and three females: There are only two SPECIES:

1. TAMARIX *Gallica*: The FRENCH TAMARISK; a tall deciduous shrub; native of France, Italy, and Spain.
2. TAMARIX *Germanica*: The GERMAN TAMARISK; a deciduous shrub; native of low overflowed places in Germany.

1. The FRENCH TAMARISK will grow to the height of about fourteen feet. The branches are few, and spread abroad in an irregular manner, some being upright, others horizontal, whilst others decline with their ends towards the earth. The bark is smooth, and of a deep-red or purplish colour next the

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sun;

fun; but on the opposite side of the branch of a pale brown. The leaves are rather of a pale green, and very beautiful. They are very narrow; and upon examining them we find them scaly in a fine degree. The flowers will be produced in plenty at the ends of the branches: They grow in seemingly very large loose panicles; but on examining them, we find that each is composed of numerous compoat flowers, which grow in spikes, and are produced near the extremities of the branches on the slender twigs all around. Each of these spikes separately is but small; and they are of a pale-red colour. The flowers of each spike are exceeding small; and the number of stamina is five, which differs from the other species by only having half the number. This sort flowers in July, and we have known it in full blow in September, and sometimes in October, and even November, when the weather has been all along mild. Nothing ornamental succeeds the blow.

2. The GERMAN TAMARISK is of lower growth, seldom aspiring higher than eight or ten feet. It is a more regular tree than the former, as the branches all naturally grow in an upright position. They are very brittle, are scented, and covered with a smooth yellowish bark. The leaves have a scaly appearance, and stand much closer together than those of the other sort: They are of an exceeding light-green colour, and very ornamental. The flowers are produced in July, at the ends of the branches, in long loose spikes. Each separate flower is small, though much larger than the other sort, and is possessed of ten stamina, which are alternately shorter. These spikes attract the attention when in blow, and are acknowledged by all to have a fine look; neither is the noble appearance lost when the flowers are faded; but it is continued in the spikes even until the seeds are ripe, which then seem to dissolve into a shattered down and scales.

The PROPAGATION of these sorts is very easy: Every cutting will grow that is set in winter, and will be a good plant by the autumn following. The encreasing of these sorts by layers has been recommended; but this is bad advice, not only as being unnecessary trouble, when they will grow so freely by cuttings, but because layers of this tree very often will not strike root at all. We have layered them, and found them, after lying two years, without any roots; and the wound being grown up, differed

differed from the other branches only in that the mould had a little altered the colour of the bark; which should warn all persons who want a stock of these plants to beware of layering: and this, no doubt, they will do when we assure them, the cuttings will strike root as freely as those of the common willow. The best time for the work is October, though any time of the winter will do. The cuttings should be of the last summer's shoot; and a moist part of the garden is most eligible for them to be planted in. In two years they will be good plants for the wilderness or shrubbery, and may then be planted out in almost any soil, though they best like a light moist earth, especially the German sort; as in other countries, where it grows naturally, it is generally found in low watery grounds.

T A M U S.

LINNEAN Class and Order, *Diœcia Hexandria*: Male flowers containing six parts, and female flowers containing one part; upon distinct plants. There are only two SPECIES:

1. *TAMUS Communis*: The COMMON BLACK BRIONY; a climber; native of England, south of Europe, and the East.

2. *TAMUS Cretica*: The CRETAN BLACK BRIONY; a climber; native of Crete.

1. The COMMON BLACK BRIONY. This has a very thick fleshy root, full of a viscous juice, blackish without, white within, and from which issue numerous slender twining stalks, which wind about themselves, or any thing that is near them, and will mount, if supported, to about twelve feet high. The leaves are heart-shaped, smooth, undivided, of a shining-green colour, and grow alternately on the stalks. The flowers come out from the sides of the stalks, in long bunches. They are small, of a whitish colour, appear in June and July, and the females are succeeded by round red berries, which ripen in the autumn.

There is a *variety* of this with brown, and another with black berries.

2. CRETAN BLACK BRIONY. This has a large, fleshy root, from which issue many slender twining branches, which, if supported, will rise to about the height of the former. The leaves are trifid, or divided into three lobes. They are of a good green colour, smooth, and grow alternately on the branches. The flowers come out in bunches, from the sides of the branches. They appear about the same time as the former; and are succeeded by the like kind of red berries.

The PROPAGATION of both these sorts is very easy: It is effected by parting the roots, or sowing the seeds. 1. The best time of parting the roots is early in the autumn, that they may be established in their new situation before the frosts come on. 2. The seeds also should be sown in the autumn, soon after they are ripe, otherwise they will often lie until the second spring before they make their appearance. A very few of these plants in the Shrubbery-quarters, will be sufficient. The best way is to well-dig the ground under the trees or bushes where you chuse they should grow; then put five or six berries in a place, covering them over about half an inch depth of mould. They will readily come up, will twist about the trees, and shew themselves to greater advantage than when directed by art in their course.

T A X U S.

LINNEAN Class and Order, *Diœcia Monadelphia*: Male flowers containing many stamina joined in one set at the base, and female flowers containing one pistillum; upon distinct plants: There are two SPECIES: *TAXUS Nucifera*; and

TAXUS Baccata: THE YEW; an evergreen tree; said to be a native of Britain, and most parts of Europe. It grows also in Canada.

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The YEW will grow to a great size. EVELYN mentions some very large ones in his time; and Mr. PENNANT, in a Tour in Scotland, took notice of a Yew in Fotheringall church-yard, the ruins of which girted fifty-six feet and a half. The leaves of this tree form perfect feathers: the young leaflets are of a pale yellowish hue; but the old leaves are of a darker green. Having been accustomed to see this tree, either as a subject of torture or a companion of the dead, and generally in an old declining and frequently diseased state, we are either wholly unacquainted with its natural beauties, or overlook them. If, however, the Yew, standing singly, be suffered to form its own head, it becomes *ornamental* in a superior degree; it throws out its lower branches to a great extent; and, shooting upwards, takes a strikingly conical outline; putting on a loose genteel appearance. The timber of the Yew is tough and durable. EVELYN enumerates its *uses*: "Besides the uses of the wood for bows (for which the close and more deeply dyed is best) the artists in Box, cabinet-makers, and inlayers, most gladly employ it; and in Germany they use to wainscot their stoves with boards of this material: also for the cogs of mills, posts to be set in moist grounds, and everlasting axle-trees, there is none to be compared with it: likewise for the bodies of lutes, theorbos, bowls, wheels, and pins for pulleys; yea, and for tankards to drink out of." He mentions whole woods of these trees diverse miles in circuit, growing in the neighbourhood of Box-hill, in Surrey. These woods, or rather, we apprehend, *plantations*, have lately been taken down (a few standards excepted); and the timber of such trees as were found were sold to the cabinet-makers at very high prices, for inlaying: one tree in particular was valued at a hundred pounds, and half of it was actually sold for fifty. The least valuable were cut up into gate-posts; which are expected to last for ages: even stakes made from the tops of Yew have been known to stand for a number of years. We do not mention these circumstances as an inducement for making plantations of Yew, so much as hints to those who may have Yew-trees in their possession. Indeed, ornamental and useful as the Yew-tree undoubtedly is, there is one great objection to planting it: we mean its poisonous effects upon cattle. It is observable, however, that in the extensive Yew-plantations above mentioned cattle were admitted with impunity

inch deep. The boxes should immediately after be put in a well-sheltered place, so that the seeds in them, whilst they are preparing to disclose, may not be destroyed by violent frosts. Being thus protected till the month of February, they must be brought out, and set along a South wall, that the sun warming the mould may set the powers of vegetation at work; and whenever severe weather is expected, they should be removed into their shelter, but must be brought out again when the fine springing weather returns. With this care, the plants will come up in the spring; whilst, without it, they frequently lie till the second spring before they make their appearance, by which neglect one year is lost. When the young plants are up, and all danger of the frost is ceased, they should be set in the shade where they can have the free air; and in this place they may remain all summer. During that season, little water should be given them; keeping them clean from weeds is the principal trouble they will cause. By the autumn they will have made a poor shoot; for this reason they should continue in their pots or boxes, which must be placed in the same sheltered situation they had at first, where they may remain all winter. In the spring they may be brought out into the sun again, to reap the benefit of his influence at that season; and if they are set in the shade at the beginning of May to remain there all summer, it will forward their growth. The spring following, being then two-years-old seedlings, they should be taken out of the boxes, and planted in beds nine inches asunder. Here they may stand two years, before they are set in the nursery. When they are taken from these beds with this intent, a moist season ought always to be made choice of, and they should be planted a foot and a half asunder, and two feet and a half distance in the rows, where they may stand till they are set out to stand. 1. In order to propagate this tree from layers, the ground should be dug, and made light round about the stools, and the branches laid down so deep as that the top eyes may but just peep above the ground, all being of the young wood. But if it should so happen, that a few of the last year's shoots on the branches should have shot out vigorously, and that there are many healthy twigs which would make good layers, that are not so long; in order to have the greater plenty of layers, and that the shorter shoots may not be buried, it will be proper to shorten the longest, so that, being

... with very *short leaves*, and another
These are increased by *layers*, and
HANBURY tells us, must be set in a very
soon become plain.

T H U Y A.

... Class and Order, *Monœcia Monadelphica*: Male
containing four parts joined at the base, and female
containing one part; upon the same plant: There are
SPECIES; Two of them as follow:

THUYA Occidentalis: The COMMON ARBOR VITÆ; an
evergreen tree; native of the moist swampy parts of America
to Siberia.

THUYA Orientalis: The CHINESE ARBOR VITÆ; an
evergreen tree; native of China.

1. The COMMON ARBOR VITÆ will rise to thirty or forty
feet high. The leaves of this tree are peculiarly formed, the
leaves being broad, and, in an advanced state of the tree, thinly
scattered: when bruised they emit a strong, and to most people,
very disagreeable scent. In a youthful shrub-like state, the
Thuya nevertheless gives no unpleasing variety, and may be
admitted amongst *ornamentals*. EVELYN and HANBURY ar-
range it amongst Forest Trees; and in Canada, the Indians, we
are told, apply it to many *uses*. HANBURY tells us "the wood
is reddish, firm and resinous; so that we may easily judge of its
value for curiosities of most sorts when worked up by the respec-
tive artificers of turnery, joiners, cabinet-makers, &c." He
seems however to speak from theory rather than from expe-
rience.

The Arbor Vitæ is to be PROPAGATED either from seeds,
layers, or cuttings, the former of which produce the best trees,
though the two latter methods of propagating are more generally
practised. 1. In order to propagate this tree from seeds, these
last should be gathered as soon as they are quite ripe, which will
be by the beginning of October. They must be sown in pots or
boxes of light fine earth, being covered about a quarter of an

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inch deep. The boxes should immediately after be put in a well-sheltered place, so that the seeds in them, whilst they are preparing to disclose, may not be destroyed by violent frosts. Being thus protected till the month of February, they must be brought out, and set along a South wall, that the sun warming the mould may set the powers of vegetation at work; and whenever severe weather is expected, they should be removed into their shelter, but must be brought out again when the fine springing weather returns. With this care, the plants will come up in the spring; whilst, without it, they frequently lie till the second spring before they make their appearance, by which neglect one year is lost. When the young plants are up, and all danger of the frost is ceased, they should be set in the shade where they can have the free air; and in this place they may remain all summer. During that season, little water should be given them; keeping them clean from weeds is the principal trouble they will cause. By the autumn they will have made a poor shoot; for this reason they should continue in their pots or boxes, which must be placed in the same sheltered situation they had at first, where they may remain all winter. In the spring they may be brought out into the sun again, to reap the benefit of his influence at that season; and if they are set in the shade at the beginning of May to remain there all summer, it will forward their growth. The spring following, being then two-years-old seedlings, they should be taken out of the boxes, and planted in beds nine inches asunder. Here they may stand two years, before they are set in the nursery. When they are taken from these beds with this intent, a moist season ought always to be made choice of, and they should be planted a foot and a half asunder, and two feet and a half distance in the rows, where they may stand till they are set out to stand. 1. In order to propagate this tree from layers, the ground should be dug, and made light round about the stools, and the branches laid down so deep as that the top eyes may but just peep above the ground, all being of the young wood. But if it should so happen, that a few of the last year's shoots on the branches should have shot out vigorously, and that there are many healthy twigs which would make good layers, that are not so long; in order to have the greater plenty of layers, and that the shorter shoots may not be buried, it will be proper to shorten the longest, so that, being
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all laid in the ground, their noses may just appear above the surface. This will be a means of preserving every twig, and consequently of propagating the greater number of plants from the same stool. When these plants are layered, the shoots ought to have a gentle twist or a small nick; for without this they will not always strike root: nay, if the land is strong and heavy, it is great odds but you find them without root, as you said them, only grown bigger. Thus will one year be lost, which shews the necessity of observing these precautions. Being layered in this manner in the autumn, by the autumn following they will have taken root; and in the spring, when the severe frosts are past, they may be taken from the stools, and planted in the nursery, at the distance directed for the seedlings. 3. In order to propagate these trees from cuttings, young shoots should be taken from the trees in August, if rain has fallen; if not, the business must be deferred till it does; for work of this kind should never be performed till the early autumnal rains have fallen upon the earth, and made it cool and moist. All these cuttings ought to be of the last year's shoot; and if a bit of the old wood be left at the end of each, it will encrease the certainty of success. The situation these cuttings should have ought to be shady and well sheltered; and the soil in which they are planted, to ensure the greater success, should be a red loam. They may be planted almost as thick as you please; not more, however, than four or five inches asunder, in rows; the rows may be a foot and a half distance from each other; and after they are planted, a little litter may be laid between the rows, to keep the frost out of the ground in winter, and the sun from over-drying them in the summer. This litter will not only keep down the weeds, but will save the trouble of watering, which will be much better for the plants; for these young plants, just striking root, do not much like watering, at least not in great plenty, as it often causes the tender fibres to rot at first striking, and so destroys the young plant. In one year these cuttings will have good roots; so that the litter may be taken away, and the surface of the earth turned over in the spring, which will cherish the plants, and prepare them to shoot vigorously the succeeding summer. In the autumn, being then two years old, they may be taken up, and planted in the nursery, at the distance directed for the seedlings and layers. After they are
planted

planted in the nursery, they will require nothing more than the usual care of keeping them clean from weeds, and digging between the rows in winter, till they are planted where they are to remain.

October is the best month for planting out these trees, tho' any of the winter or spring months will answer. When they are planted, they should be set a yard asunder, and thinned and managed as has been all along directed for others which are nearly of the same growth.

There is a *variety* of this tree discovered by Mr. HANBURY, which he has named *The American Sweet-scented Arbor Vitæ*: this seems to remove a principal objection to the Common sort; namely, the disagreeableness of its smell. He says, "It came up from some scattered seeds at the bottom of a box I had from Pennsylvania. It has the same dusky look in winter as the Common sort, though it is better furnished with branches; neither are they produced so horizontally, or hang down in the manner of the Common sort. What makes this sort most valuable is the property of its leaves; for, being bruised, they emit a most refreshing odour, which is by many supposed to be as fine an aromatic as any we have; whereas the leaves of the other sorts being bruised, to most people are foetid and disagreeable. Whether this property will be continued by seeds, I have not yet experienced."

2. The CHINESE ARBOR VITÆ is a much more beautiful plant than the Common species; for its branches are more numerous, and grow in a more picturesque erect manner, and the leaves are of a fine pleasant light-green colour; whereas those of the other in winter are of a dark disagreeable green, inclined to a dusky-brown, which is the worst property of this tree in the winter-season. The branches of the Common Arbor Vitæ are of a dark-brown colour, and the bark on the young branches is smooth; the bark of the Chinese is also smooth, and of a light-brown. The leaves of this sort, like the others, are imbricated, that is, they grow over each other; but they are more numerous and smaller, and grow closer together; and being of so fine a green, which continues all winter, makes this sort the most valuable, though not to the rejection of the others, even in pleasurable plantations; for those cause good variety by their manner of growth, as well as the colour of their leaves. The flowers
of

of none of the sorts have any beauty : they have males and females distinct ; and the females of the Common Arbor Vitæ are succeeded by smooth cones, whereas the cones of the Chinese sort are rugged. They are larger than the Common sort, and are of a fine grey colour.

This species, as well as the Sweet-scented sort, may be PROPAGATED by layers and cuttings, as has been directed above, for the Common sort.

T I L I A.

LINNEAN Class and Order, *Polyandria Monogynia* : Each flower contains many males and one female : There are only two SPECIES :

1. *TILIA Europæa* : The EUROPEAN LIME, or the LINDEN-TREE ; a tall *deciduous tree* ; native, it is said, of England, and most parts of Europe.

2. *TILIA Americana* : The AMERICAN LIME ; a *deciduous tree* ; native of Virginia and Canada.

1. The EUROPEAN LIME will grow to eighty or ninety feet high, and from twenty to thirty feet in circumference. The foliage is peculiarly soft and delicate, and its flowers sweet in the extreme. It naturally forms a most perfectly elliptical head ; and even in winter its general appearance is rendered pleasing, by the elegance of its long slender twigs. As standards, especially in a rich deep soil, Limes are peculiarly eligible ; they are, in such situations, of very quick growth, and except the Oak and the Esculus, few or no trees exceed them in point of ornament. The wood of the Lime is light, soft, and peculiarly fine-grained ; it ranks with that of the Sycamore and the Poplar, and may serve upon many occasions as a substitute for the Beech : indeed, in one point of view, it seems to exceed any of those woods, and stands upon its own basis ; namely, for the purpose of the carver : we cannot, however, upon the whole, recommend it in general terms to the planter as a timber-tree : land such as this tree requires to render it of quick growth, ought rather to be applied to the more useful purpose of husbandry, or, if convenient or necessary

to be planted, should be occupied by the more valuable Oak or Ash ; for which necessary woods, a certain and perpetual market may be expected.

The European Species affords several *varieties* ; as,

The Narrow-leaved Mountain Lime,

The Broader-leaved Mountain Lime,

The Elm-leaved Lime,

The Green-twiggged Lime,

The Red-twiggged Lime.

All these are very inconsiderable differences ; and though, if nicely observed, they cause some variety, yet that is so small, as not to deserve much pains to procure them, except the Red-twiggged sort, which of all others is the most beautiful ; because, when divested of their leaves, its young branches exhibit their fine, smooth, red bark all winter, which has a pleasing effect in all places ; though in the younger plants this effect will be more striking and delightful, as the bark only is red of the last year's shoots ; and the smaller the plants are, the more of these and the less of older wood the composition of the tree will be ; whereas, when the trees get older, the twigs will be shorter and less visible ; and though still of a red colour, yet not of so delicate a red as the young plants wear on their bark at first. Sometimes these trees will run away from their colour, and grow with green branches ; but as this is not common, the Red-twiggged sort must be still allowed to be preferable to all others ; and the seeds of this must always be sown for the raising of sorts.

The PROPAGATION of the EUROPEAN LIME is from seeds, cuttings, and layers : HANBURY, however, says, " That trees from layers or cuttings never grow so handsome nor so fast as those from seeds. These should be gathered from thriving healthy trees of the true Red-twiggged kind ; and then by far the greatest part of the young plants will be of that sort. The seeds will be ripe in October ; and let a dry day be made choice of for gathering them. As the seeds grow at the extremity of the branches, and as it would be tedious to gather them with the hand, they may be beaten down by a long pole, having a large winnowing sheet, or some such thing, spread under the tree to receive them.

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When you have got a sufficient quantity, spread them in a dry place, for a few days, and then sow them. The manner of sowing them is in beds of rich mould, about an inch deep, and about an inch asunder all over the bed. The plants will appear the first spring, and should stand in the seminary two years, when they should be removed to the nursery, planting them in rows, about two feet and a half asunder, and a foot and a half in the rows; and here they may remain till wanted for use.

2. The AMERICAN LIME. Of this species also there are a variety or two, which indeed differ very little in appearance from any of the Common European sorts; for the leaves are heart-shaped like theirs. There are a larger and a smaller leaved sort. Their edges are finely serrated, and end in acute points. These beautifully cordated leaves, that thus run into acute points, have their under surface of a paler green than their upper. The larger-leaved kind is by far the finest sort; and the branches vary from all others of this genus, in that they are covered with a dark-brown bark. The flowers excite no attention in the Gardener; but the Botanist is delighted when he finds they are furnished with nectaria, whereas the flowers of our Common Lime-tree have none. The flowers are produced in bunches, like our Common sort, but make no better figure. They are very fragrant; and are succeeded by coriaceous capsules, containing the seeds.

The PROPAGATION of this species is the same as that of the European sort, if seeds can be procured from abroad; if not, a few plants must be obtained. These should be planted in a light rich soil, if such can be had, for in such they shoot the strongest; though almost any other will do. After these plants have stood a year or two, they should be headed near the ground, for stools. They will then shoot out many young branches from these, which may be layered in the autumn; though if they stand two years there will be greater plenty of young twigs for layering; for every shoot of the first summer will the year following divide into several. When the layering of these is to be performed, which ought to be in the autumn, the strong two-years shoots must be brought down; and if they are stiff and do not bend readily, they must have a gentle plash with the knife
near

near the bottom ; a slit should be made at the joint for every one of the youngest twigs, and their ends bent backwards that the slit may keep open. This being done, the mould must be levelled among the layers, and the ends of them taken off to within one eye of the ground. The business is then done ; and the autumn following they will have all good roots, many of which will be strong, and fit to plant out to stand, whilst the weakest may be removed into the nursery-ground, in rows, to gain strength. All the sorts of Lime-trees will also grow from cuttings ; but this is found to be an uncertain method ; and if it was more certain, plants raised either by them or layers are not near so good as those raised from seeds, which way ought always to be practised where they can be obtained. Where that is not to be done, any art must be used to obtain some few plants ; and if the gardener should happen to procure a cutting or two of the American sorts, set them in pots, and plunge them in the bark-bed ; let him water and shade them, and they will be sure to grow ; and these he may afterwards encrease at pleasure.

V I B U R N U M.

LINNEAN Class and Order, *Pentandria Trigynia* : Each flower contains five males, and three females : There are eleven SPECIES ; eight of which are proper for our collection :

1. *VIBURNUM Lantana* : The COMMON VIBURNUM ; or WAYFARING-TREE, or PLIANT-MEALLY-TREE ; a *deciduous shrub or tree* ; native of England, and most of the northern parts of Europe.

2. *VIBURNUM Dentatum* : The SAW-LEAVED VIBURNUM ; a *deciduous shrub* ; native of Virginia.

3. *VIBURNUM Nudum* : The ENTIRE-LEAVED VIBURNUM ; a *deciduous shrub* ; native of Virginia.

4. VI-

4. *VIBURNUM Prunifolium*: The PLUM-LEAVED VIBURNUM, or the BLACK HAW; a *deciduous shrub*; native of Virginia and Canada.

5. *VIBURNUM Opulus*: The MARSH ELDER; a *tall deciduous shrub*; native of moist grounds in England, and most parts of Europe.

6. *VIBURNUM Accrifolium*: The MAPLE-LEAVED VIBURNUM; a *deciduous shrub*; native of Virginia.

7. *VIBURNUM Cassinoides*: The BASTARD CASSINE; or CASSIOBERRY, or SOUTH-SEA THEA; a *deciduous shrub*; native of Virginia.

8. *VIBURNUM Tinus*: The LAURUSTINUS; an *ever-green shrub*; native of Italy and Spain.

1. The COMMON VIBURNUM will grow to be twenty or more feet high, though it may be kept down to any height desired; and in such gardens as are at a distance from the places where it grows common, and in which it has not been before observed; in such gardens, it is enquired after, and attracts the attention of those who walk therein, almost as much as any shrub in the whole collection. The branches are not very numerous, and in winter they are covered with a smooth greyish bark, inclined to a brown colour, especially near the bottom of the shoots. The younger, as they shoot, are white and downy, and the ends, especially in winter, feel soft and woolly. The branches are long, and exceeding tough. They will often shoot near six feet from the bottom in a year; and make the best bands for faggoting. The leaves are very large, heart-shaped, very full of large veins, and have their edges serrated. Their upper surface is of a dark-green colour, but their under is white, and like cotton; and they are placed opposite by pairs on the branches. The flowers are produced at the ends of the branches: the buds will be formed the preceding summer, which continue to get larger in the autumn; all winter they will be in a state of increase, and at that season they terminate the ends of the branches like so many rough buttons. The flowers, when out, will be in large umbels, to form which these buds encrease in size all spring, but shew little of what may be expected from them until about May,

May, when they begin to divide, and shew that they are growing to be bunches of flowers. In June, they will be wholly out, and formed into large umbels; they are of a white colour; and have a most noble look. These flowers are succeeded by berries, which are also ornamental, and cause variety; for they will be first of a fine red colour, and afterwards of a deep black.

There is a *variety* of this sort, with more oval leaves; but the differences are very inconsiderable in all respects. There is also the *striped-leaved Viburnum*, which is coveted by those who are fond of variegated plants.

2. The SAW-LEAVED VIBURNUM is so called, because the leaves are more beautifully serrated than any of the sorts. It is at present not very common. Its branches, leaves, and flowers, are not so large as the former, but they are of a more genteel growth. It will grow to the height of about ten feet. The bark is smooth, and of a light colour; and the leaves are of a fine light green. They are tolerably large, though nothing like those of the other sorts, and stand on longish footstalks, which give them a fine air. They are strongly veined, and have their edges finely serrated. They are of a roundish oval figure, and are placed opposite by pairs on the branches. The flowers are produced in June, at the ends of the branches, in very large round bunches: Their colour is white; they appear in June; and are seldom succeeded by any berries in England.

3. ENTIRE-LEAVED VIBURNUM. The sorts of *Laurustinus* are evergreens, and have all entire leaves; but this species of *Viburnum* agrees in every respect in description with two sorts, one of which sheds its leaves in winter, whilst the other retains its verdure during that season. The deciduous kind grows to about ten feet high; the younger branches are covered with a smooth, deep-red bark; whilst that of the older, tho' smooth, is of a dark brown colour. The leaves are pretty large, and of a delightful shining green on their upper surface; but their under is paler, and much veined: they are of a lanceolated, oval figure, though their ends are rounded; their edges are entire, and they stand opposite by pairs on the branches. The flowers are produced in July at the ends of the branches in large umbels; their colour is white; and they have much the resemblance of those of the Common *Laurustinus*, though they
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are rather smaller. They have a genteel look ; and are succeeded by berries, which never ripen with us.

4. PLUM-LEAVED VIBURNUM, or BLACK HAW. This species, for the most part, goes by the name of Black Haw, because the fruit a little resembles that of the Haw, though of a black colour. It will grow to be about ten feet high ; and the branches are covered with a smooth reddish bark. The leaves are oval, and not so large as any of the other sorts, being seldom more than two inches long, and proportionally broad. They are of a light pleasant green colour, and have their edges finely serrated. Their footstalks are pretty short, and they grow for the most part opposite by pairs on the branches. The flowers are produced in June, at the ends of the branches, in large umbels. Their colour is white ; but they are seldom succeeded by berries in England.

5. MARSH ELDER. Of this species there are two notable varieties. Marsh Elder with Flat Flowers. Gelder-Rose.

The *Marsh Elder with flat flowers* will grow to be a tree near twenty feet high. The young branches are covered with a smooth and almost white bark. They are often produced opposite by pairs ; though in general they are of an irregular growth. The young shoots will be cornered ; and this is more perfect in the more vigorous ones, being composed of five or six flat sides. The leaves are large and ornamental, of a fine green colour and a soft contexture, composed of three large lobes, which are jagged at their edges, and grow on glandulous footstalks. In autumn these leaves have exquisite beauty ; for they die to so fine a red, as to have a striking effect at that season. The flowers are produced in large umbels, the beginning of June, all over the tree, and have a grand look. Each umbel is composed of very many hermaphrodite flowers, which of themselves make no great figure ; but they are surrounded by a border of male flowers, which are white, and are so ornamental to each bush as to throw a lustre over the whole tree. Neither does this shrub cease to exhibit its beauties when the flowers are over ; for besides what it affords by its leaves, which are inferior to few other trees, both in summer and autumn, the hermaphrodite flowers will be succeeded by fine scarlet berries, which will grow in such large bunches and be produced in such plenty all over the shrub, as to give it

an appearance superior to almost any thing of the berry kind ; and were it not for its commonness, this would, on their account only, be ranked amongst trees of the first value.

The *Gelder-Rose*, or *Snow-ball-Tree*, is a variety only of the preceding sort ; its origin was accidental, and it is kept up and continued by culture in our gardens. The nature of the shoots and size of the tree, together with the colour of the bark, differ in no respect from the former. The leaves also are of the same form, are produced in the same manner, and die away to the same delightful red in the autumn. The variety this sort occasions, then, is by the flowers ; and by these this variety is so great, as to be exceeded by scarcely any two distinct species whatsoever. They are produced in the beginning of June, all over the tree, in large globular bunches. Each bunch is composed of numerous male flowers, of the same nature with those that surround the hermaphrodite flowers of the former sort. Their colour is white, like those ; but being produced in large globular heads, and in great plenty, have a much finer appearance. HANBURY adds, " It is delightful to see this tree usher in the month of June, as it were, with its glorious flowers, which will then at a distance have the appearance of balls of snow, lodged in a pleasing manner all over its head."

6. MAPLE-LEAVED VIBURNUM. This is a middle-sized shrub, sending forth several branches, which are rough, and full of pith. The leaves are composed of three principal lobes, like those of the Maple-tree, and grow on smooth footstalks: The flowers come out from the sides of the branches, in umbels: Their colour is white, they appear in June, and are rarely succeeded by seeds in England.

7. BASTARD CASSINE, Cassioberry-bush, or South-Sea Thea, is rather tender, will grow to about ten feet in height, forming itself into a bush by rising with three or four stems, and sending forth numerous branches from the bottom to the top. The leaves are of an oblong, lanceolated figure, serrated, grow opposite by pairs, and continue on the trees until the nipping frosts come on ; inasmuch that in the early part of a mild winter, they have been taken for an evergreen. These leaves are of an exceeding bitter nature, if chewed ; and it is said that an infusion of them proves efficacious in removing pain,

pain, bracing a relaxed stomach, and restoring a lost appetite. The flowers are produced in bunches from the sides of the branches. Their colour is white; they appear at the end of July; and are succeeded by red berries in the autumn. Whenever this plant is to have a share in a Collection, a naturally warm and dry soil, that is well sheltered, must be sought for, otherwise there is a chance of losing it by frosts; or if the plant is not wholly destroyed, the young branches will be killed, and the tree so haggled, as to have rather a bad appearance with others in the spring.

The first six sorts are very easily PROPAGATED, either by seeds, layers, or cuttings. No particular art need be used for the seeds, whether they be of the sorts of our own ripening, or of those we receive from abroad. A border of common garden-mould, made fine, will be sufficient; though it may be proper to observe, that many of them will lie until the second spring before they appear. The beds, before and after the plants are come up, will want nothing except weeding; and when they are a year or two old, they may be planted in the nursery, at small distances; and in two or three years more they will be fit to be finally planted out. 2. They are all easily propagated by layers also; for if branches are pegged down, and the mould any-how thrown on them, they will have plenty of roots by the next autumn; and most of them will be good plants for almost any place. This freedom, however, should be given to none but those of our own country; for the American sorts, as being strangers, demand more care and neatness in the performance. 3. They are also easily propagated by cuttings; for the young shoots of these trees cut into lengths, and planted in a moist garden soil, in the autumn, will any of them grow; and this is our common method of propagating them: However, if a person has only a few plants of the American kinds, the best way is to make sure of encreasing them by layers.

If a large quantity is wanted, the best way to PROPAGATE the MARSH-ELDER is by seeds. As the GELDER-ROSE is a male flowering variety, and never produces any seeds, it must always be propagated by layers or cuttings, by which the variety will always be preserved.

The **BASTARD CASSINE** is propagated by layers. The young shoots are fit for this purpose; and when they have taken root, if they are planted in pots, and protected for two or three winters, until they are grown strong plants, either in a greenhouse, or under a hotbed-frame or some cover, there will be less danger of losing them than by planting them immediately in the nursery, or where they are to remain for continuance. However, a person who has not these conveniences, must fix on the warmest and best-sheltered spot he can find; and having prepared the ground, let the layers be taken from the old plants in the spring; if the weather be moist, it will be so much the better; and let him plant them in the nursery, row by row, at two feet asunder. In the summer, they should be watered in dry weather, and when the winter frosts begin to come on, the ground should be covered with pease-straw almost rotten, old thatch, or tanners bark, to keep them from penetrating the roots. By this means many of the plants will be preserved; and this care may be repeated every winter until they are planted out to stand. But this is not so good or so safe a method as potting them, and managing them as before directed; for they may be then turned out of their pots, when wanted, mould and all together, without feeling the effect of a removal.

8. The **LAURUSTINUS** is one of the greatest ornaments of our gardens in the winter months, not only as it is a fine evergreen, but because, during that season, it will either be in full blow, or else exhibit its flowers and buds in large bunches ready to burst open, in spite of all weather that may happen; and the boldness of these buds, at a time when other flowers and trees shrink under oppressive cold, is matter of wonder and pleasure. There are many **VARIETIES** of *Laurustinus*; but those most remarkable are, The Narrow-leaved *Laurustinus*. The Broad-leaved *Laurustinus*. The Hairy-leaved *Laurustinus*. The Shining-leaved *Laurustinus*. The Silver-striped *Laurustinus*. The Gold-striped *Laurustinus*.

The *Narrow leaved Laurustinus* is so called because, of all the sorts, the leaves of this are smallest. It is generally planted among the low shrubs; tho' we have known it trained up against a wall to fourteen or sixteen feet high. It produces
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its branches irregularly, which will grow so thick and close as to form a bush; for it hath that appearance when planted singly in open quarters. The bark in summer is green, and often a little hairy and glandulous; in winter it is frequently of a dark-brown colour. The leaves grow by pairs, standing opposite, on strong and very tough footstalks. They are of an oval figure, and their edges are entire. Their upper surface is smooth, and of a strong green colour; but their under is lighter, and a little hairy; and they are at all seasons very ornamental. The flowers are produced in large umbels, and are well known. It generally will be in full blow in January, February, March, and April; during which time it will be covered with bloom, causing a delightful effect.

The *Broad-leaved Laurustinus* differs from the former sort, in that the leaves are broader, and the roots proportionably stronger. It will arrive to a greater height than the other sorts, and the umbels of the flowers are larger, though they will not be produced in such plenty; it, nevertheless, makes an excellent figure.

The *Hairy-leaved Laurustinus* is as free a shooter as the other, and the leaves are frequently as large, and differs from that in scarcely any thing but that the leaves are hairy; the young shoots also are hairy to a great degree. In this respect it makes a small variety. It flowers like the other sorts; but blows rather later than those.

The *Shining-leaved Laurustinus* is still of about the same growth, and the leaves are large and fair. They are of an oval figure; and their upper and under surfaces are both shining, though their under is veined, and of a paler green. It differs only in that the leaves and young shoots are smooth, shining, and free from hairs; and being of this lucid green, force esteem. It generally flowers later than the first two sorts.

The *two variegated sorts* are only one or other of the above sorts, striped with white or yellow; though the sorts striped with Silver we have met with have been the Broad-leaved kinds; but the Gold-striped sorts have always been the first, or Narrow-leaved kind, with leaves striped or blotched with yellow; and on these accounts, those who are fond of variegated plants covet them in their collection.

All these sorts are easily PROPAGATED ; for if in winter a little mould be any-how thrown amongst the young branches, they will strike root, and be good plants by the next autumn. Notwithstanding these plants, however carelessly the mould be thrown, will grow, it is not here recommended to the Gardener to practise that custom ; it is expected that he be always neat in all his work ; it is mentioned here only to shew what may be done ; but let him gently lay the branches down, strip off some of the lower leaves, and with his hand draw the mould amongst the young shoots, and leave them neated up, as if a workman had been there ; and these will be all good plants by the autumn, the strongest of which may be set out to remain, whilst the youngest may be planted out in the nursery, at small distances, to gain strength.

V I N C A.

LINNEAN Class and Order, *Pentandria Monogynia* : Each flower contains five males and one female : There are five SPECIES ; three of which will bear our open air.

1. *VINCA Major* : The LARGE-LEAVED PERVINCA or PERIWINKLE ; a *shrub* or *climber* ; native of England, France, and Spain.

2. *VINCA Minor* : The SMALL-LEAVED PERVINCA or PERIWINKLE, or the COMMON PERIWINKLE ; a *climber* ; native of Germany, France, and England,

3. *VINCA Lutea* : The YELLOW PERVINCA, or PERIWINKLE ; a *climber* ; native of Carolina.

1. The LARGE GREEN PERIWINKLE has smooth stalks of a pale green colour, which, if supported, will arise to about four or five feet high ; but, unsupported, the tops turn again at about two feet high, and thus at a distance form the appearance

pearance of a round evergreen shrub, of that low size; and when they are designed for this, the suckers must be always taken off, otherwise they will soon form themselves into a pretty large bed; for they will send out these at some distance from the rotten plant, and the very tops bending to the ground will often take root, which, unless taken away or prevented, will soon spread abroad, and take off the shrub-like appearance of the plant. The leaves are of a delightful evergreen, and stand opposite by pairs on strong footstalks. Their edges are entire, and they are of an oval heart-shaped figure. They are smooth and shining, and very ornamental in the winter months. The flowers are produced from the wings of the stalks, almost all the year round; are blue; but there will be sometimes white ones seen amongst them. They are composed of one petal, standing singly on upright footstalks. The tube is narrow, and nearly of a funnel shape; but their brim is large and spreading, so as to form a pretty large well-looking flower.

2. The COMMON GREEN PERIWINKLE has smooth green stalks, like the former, though they are much more weak and slender, and will trail along the ground, and strike root at almost every joint: so that they will soon run a great way, their general surface putting on a kind of rock-work-like appearance; though if they are planted near other shrubs, they will rise to two or three feet high, and will cause a pretty look amongst them this way. The leaves are smooth, and of a fine shining green colour. They are of an oval figure, their edges are entire, and they stand opposite by pairs on strong short footstalks. The flowers are composed of one petal. They spread open at the rims, and grow from the wings of the stalks in the same manner as the former, though they are much smaller; and as they are not so subject to flower in winter, that is another reason for their being held less valuable.

The *varieties* of this species are,

The Green Periwinkle with Blue Flowers.

The Green Periwinkle with White Flowers.

The Green Periwinkle with Double Blue Flowers.

The Green Periwinkle with Double White Flowers.

The Green Periwinkle with Double Purple Flowers.

The Gold-striped Periwinkle with White, Blue, and Double Flowers.

The Silver-striped Periwinkle with White, Blue, and Double Flowers.

All these sorts are *varieties* of the Common Periwinkle; tho' they may differ in the colour or properties of the flowers, or the variegation of the leaves. The White-flowering Periwinkle is this very sort, only the flowers are white; the Double Periwinkle is the same sort, only the flowers are double and of a reddish colour; the Gold-striped Periwinkle is also this sort, only the leaves are beautifully variegated with a gold colour; and the Silver-striped with that of silver: the variegations are so completely done, and their stripes so little subject to vary or run away, that they are highly esteemed amongst the variegated tribe. There are Double Blue and Double White flowers belonging to both these sorts; and these are all the hardy varieties Nature affords us from this genus.

3. YELLOW PERIWINKLE has a twining slender stalk, which twists about whatever is near it. The leaves are oblong, and not much unlike those of some of our willows. The flowers are both single and double; and thus continue in succession from June to the end of summer. This species must have a warm light soil, and a well-sheltered situation.

The PROPAGATION of these sorts may be easily seen to be not very difficult. With regard to the first sort, the suckers it naturally sends out may be taken up and multiplied at pleasure; and the ends of the shoots that turn again, and strike root into the ground, will be good plants when taken off: Nay, the very cuttings will grow; so that any desired number of these plants, be it ever so great, may be soon obtained. With regard to the other sorts, there is no end of their multiplying; for as they will strike root, if permitted to lie on the ground, at every joint, one good plant of each sort will produce a hundred of the like in a season or two.

All these sorts are very hardy, and will grow under the drip of trees, and flourish in all soils and situations; no plants are more proper to be set among low or larger shrubs, either in the evergreen or deciduous quarters, to form tufts or beds

in the resemblance of rock-work, or to be placed near other shrubs, by whose assistance their slender stalks may be supported to the height Nature will admit them to rise,

V I S C U M.

LINNEAN Class and Order, *Diœcia Tetrandria*: Male flowers containing four parts, and female flowers containing one part; upon distinct plants: There are nine SPECIES; one of them common in many parts of this island:

VISCUM Album: The MISLETOE; a *parasitical plant*; native of England and most parts of Europe.

The MISLETOE is a singular plant. It will grow upon trees only; more especially upon the Crab, the Hawthorn and the Maple: It is not unfrequent upon the Ash; but seldom, very seldom indeed, is seen upon the Oak; and but rarely upon the Willow. It has a thick fleshy leaf standing stiff upon the twigs, which are green and forked. The whole of the plant is of a green colour, and of the shrubby, bushy kind, rising in numerous stems; dividing into forked branches; and these again into forked twigs, thickset with leaves. This thickens the general surface of the plant, and forces it into a spherical or more generally a hemispherical form. A tree thickly scattered with this plant, has somewhat the appearance at a distance as if overgrown with Ivy. The Mistletoe, however, is of a lighter green than the Ivy; especially when full of berries, which are of a light transparent Pea-green colour, and about the size of the common Field Pea; but when full ripe they become paler, taking the appearance of white currants. The pulp is viscid in the extreme, being of the consistence of thick gum-water. Each berry incloses one vetch-like seed. In the cyder counties the Mistletoe is a mischievous intruder upon the Apple-trees; so much, that were not the Farmers to cut it out

out every three or four years, or as often as necessary, it would destroy the tree. It is very common to see Crab-trees, especially in or near woods, entirely killed by this truly parasitical plant. This is a curious fact in Nature, and affords ample subject for reflection. The Mistletoe may be said to be a superior order of Plants; for like the animal creation it feeds not upon the juices of the earth, but upon those of vegetables. This, added to its supposed medicinal qualities, assisted, probably, in rendering it sacred among the antient Britons; especially when found growing upon the Oak; which tree they also held sacred.

The PROPAGATION of this Plant is supposed to be, naturally, by the Mistletoe Thrushes, which delight in its glutinous berries, and which in autumn, the season of their becoming ripe, repair in flights to the places where the Mistletoe abounds. It seems to remain unascertained whether the seed be conveyed in the fæces of the bird, or whether, sticking to its beak amongst the glutinous matter, the bird in cleaning its beak wipes it off upon the branch of the tree it happens to perch upon. This last is the more probable supposition; as it has been found, that by striking the seeds upon the clean smooth part of the bark of some or all of the trees abovementioned, this plant may be artificially propagated. We do not learn, however, that the attempt has yet been successful upon the Oak or the Willow. It seems probable that the Bird, in wiping its beak across the branch, ripples the cuticle or outer rind; and this ought perhaps to be copied in attempting artificial propagation. In places where this plant is unknown, the cultivation of it would add a striking variety to shubbery-quarters.

V I T E X.

LINNEAN Class and Order, *Didynamia, Angiospermia*. Each flower contains four males and one female; two of the males being longer than the other two; and the seeds being covered. There are eight SPECIES; one only of which is proper for our Collection:

VITEX Agnuscastus: The AGNUSCASTUS, or the TREE OF CHASTITY; a *deciduous shrub*; native of marshy, moist places in some parts of France, Spain, and Italy.

The TREE OF CHASTITY (being held by the antients as conducive to that amiable virtue) affords two *varieties*:

The Broad-leaved Chaste-tree.

The Narrow-leaved Chaste-tree.

One description will nearly serve for both sorts; though it has been observed, that the Narrow-leaved sort will grow to be the tallest. The branches are produced from the bottom and sides of the stalk. They are very pliable, and the joints are long. It is difficult to express the colour of the bark. To say it is grey is not proper; and to say it is brown is not true; it is of a colour between both, though, in different soils, the bark of some trees will be of a darker colour than others. The leaves are digitated, being composed of several folioles, which so unite at their base in one common footstalk as to resemble an open hand. These folioles are of a dark-green colour; and their number is uncertain; being five, six, seven, and sometimes eight. They are narrow, and the longest grow always in the middle, whilst the shorter occupy the outsides. This character is common to both the sorts; though it is observable, that the folioles of the Broad-leaved sort are both shorter and broader, which occasions its being so called. Their edges are also serrated, whilst those of the Narrow-leaved are intire; and in this the most important difference of these plants consists. The flowers of both sorts are produced at the ends of the branches, in whorled spikes. These spikes are pretty long, and their colour is that of a bluish purple.

ple. They appear in September and October; and are not succeeded by seeds in England. Each individual flower is inconsiderable; but the whole spike makes a good show; and the circumstances of the flowers being produced late, even often when most other flowers are over, as well as being also very fragrant, greatly heighten their value. The early frosts often destroy the beauty of these spikes, before and when they are in full blow; so that it is no wonder their ornamental fruit seldom, if ever, succeeds them.

There is a *variety* of each kind with white flowers.

The PROPAGATION of these sorts is easily done, either by layers or cuttings. 1. The young shoots being layered, any time in the winter, will have roots by the autumn following; though it will be proper not to take them up until the spring, as they shoot late in the autumn, and have often their ends destroyed by the frosts. When this work is deferred till the spring, all the killed ends may be taken off; and all danger from severe frosts being over, they will meet with no check in their preparing to shoot. The removing of these trees in the spring, however, is not absolutely necessary; for it may be done any time in the winter, though the cutting off the dead ends should be deferred until the latter end of March, when they should be gone over with the knife, and cut down to within an eye or two of the ground, whether planted in nursery-lines, or finally set out to stand. 2. Plenty of plants may be soon raised by cuttings. About the middle of March is the best time for planting them; and they should be set in a shady border of good light garden-mould. Nothing but weeding, and now and then watering, will be required all summer; though if the place is not naturally well sheltered, they must be defended from black frosts by sticking plenty of furze-bushes all around them. If this be judiciously done, it will take off the keen edge of frosty winds, sufficiently, and will occasion much less trouble and expence than reed-hedges, &c. All these plants are very hardy; but they require this protection, to preserve the young shoots. Here they may grow until they are fully planted out; and if it be a moist, light, rich soil, and a well-sheltered situation, they will like it the better.

V I T I S.

LINNEAN Class and Order, *Pentandria Monogynia*: Each flower contains five males and one female: There are eight SPECIES; four of, which are adapted to ornamental plantations:

1. *VITIS Labrusca*: The WILD VIRGINIA GRAPE; a climber; native of many parts of North America.
2. *VITIS Vulpina*: The FOX GRAPE; a climber; native of Virginia.
3. *VITIS Laciniosa*: The PARSLEY-LEAVED GRAPE; a soft climber; native of Canada.
4. *VITIS Arborea*: The PEPPER-TREE; a shrub or climber; native of Virginia and Carolina.

1. The WILD VIRGINIA GRAPE, if desired for its climbing property, should be planted among pretty large trees or shrubs; for, by the assistance of its well-holding tendrils, it will arrive to a great height; and if the shrubs that grow near it be low-growing ones, it will entirely over-top them; and in summer, its leaves being large, almost conceal them from the sight. These large ornamental leaves have their edges indented, and are nearly divided into three lobes, though they are of a heart-shaped appearance; and downy on their under side. The flowers are produced in bunches, like the other species of the Vine; and they are succeeded by round, rough-flavoured, black fruit.

2. The FOX-GRAPE. The name of this species naturally brings the fable of the fox and grapes to the memory; and it is very common for those who are not skilled in the history and nature of plants, to ask if this species is not possessed of more excellent properties, or produces more desirable fruit, than most of the other sorts of the vine; whereas, alas! this sort is called the Fox-Grape from the ill flavour of its fruit, which is like the scent of a fox, and which name the inhabitants of Virginia, where it grows naturally, have given it on that account. It must, like the former, be planted among largish trees; for it will

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 All over-top the small ones. The leaves are large, smooth on both sides, of an heart-shaped figure, and their edges are indented. The flowers are produced in the Vine-like bunches; and they are succeeded by black fruit of the above-named disagreeable flavour.

3. The **PARSLY-LEAVED GRAPE**. The leaves of this sort are finely divided, and at a distance resemble those of parfly, though larger. The stem is very thick, and the shoots are strong; so that when it is planted for a climber, the tallest trees must be appropriated for its support; otherwise it will be too powerful for trees of lower growth.

4. The **PEPPER-TREE** is a weaker shooting plant than any of the others, and affords singular beauty from its leaves. Their upper surface is of a fine shining green colour; their under is paler, and they are composed of a multitude of folioles of the most elegant and delicate texture. The shoots will arrive to a tolerable height by their tendrils, if they have trees near for their support; but they are very liable to be killed down very low in severe winters; on which account the plant should be stationed at first in a well-sheltered place. Every spring the Gardener should carefully cut off not only the dead shoots, but shorten them within an eye or two of the old wood, which will make them shoot stronger, and the leaves will be larger and finer.
 • The flowers are white, and are produced in bunches from the wings of the stalks; but we have never yet perceived any fruit to succeed them. The name Pepper-tree is a cant name, and was given it without any meaning by the inhabitants where it grows naturally.

All these sorts are **PROPAGATED** by cuttings, layers, or suckers. 1. The cutting must be the bottom of the last year's shoot; and if there be a bit of the old wood to it, it will be the better. 2. When raised from layers, the young branches should be pegged down, and a little soil drawn over them. They will strike root, and become good plants by the season following. 3. Suckers may be taken from these plants, and immediately planted; or may be set in the nursery for a year, to gain strength before they are set out.

U L E X.

LINNEAN Class and Order, *Diadelphia Decandria*: Each flower contains ten males and one female; the males being joined at the base in two sets: There are two SPECIES; one of which is a green-house plant; the other is,

ULEX Europæus: The FURZE, WHIN, or GORSE; an ever-green shrub; native of England, France, and Brabant.

The FURZE is so extremely common in this country, that how ornamental soever it may be in nature, it cannot with much propriety be admitted into our *ornamental* plantations. Its *uses* however are many; as a fuel where wood and coals are scarce; and as hedge-wood upon light barren land: its use as horse provender too seems to be fully proved, though not yet established.

HANBURY enumerates the following *varieties*; some of which, if properly trained, may add a kind of secondary ornament to our grounds and shrubberies.

The White-flowered Furze.

The long Narrow-spined Furze.

The Short-spined Furze.

The large-French Furze.

The Round-podded Furze.

The Dwarf Furze.

The FURZE is PROPAGATED from seeds sown very shallow, in February or March. See the Article HEDGES.

U L M U S.

LINNEAN Class and Order, *Pentandria Digynia*: Each flower contains five males and two females.—LINNEUS makes only three SPECIES of ULMUS:

1. ULMUS

1. *ULMUS Campestris*: Leaves double-fawed; unequal at the base.
2. *ULMUS Americana*: Leaves equally fawed; unequal at the base.
3. *ULMUS Pumila*: Leaves equally fawed; equal at the base.

MILLER enumerates six SPECIES:

“ 1. *ULMUS Campestris*: Elm with oblong acute-pointed leaves, which are doubly fawed in their edges, and unequal at their base; called The COMMON ROUGH OR BROAD-LEAVED WITCH ELM.

2. *ULMUS Scaber*: Elm with oblong oval leaves, which are unequally fawed, and have leafy empalements to the flowers; called The WITCH HAZEL, OR VERY BROAD-LEAVED ELM; by some unskilful persons called The ENGLISH ELM.

3. *ULMUS Sativa*: Elm with oval acute-pointed leaves, which are double fawed, and unequal at the base; called The SMALL-LEAVED OR ENGLISH ELM.

4. *ULMUS Glaber*: Elm with oval smooth leaves, which are sharply fawed on their edges; called The SMOOTH-LEAVED WITCH ELM.

5. *ULMUS Hollandica*: Elm with oval acute-pointed rough leaves, which are unequally fawed, and a fungous bark; called The DUTCH ELM.

6. *ULMUS Minor*: Elm with oblong smooth acute-pointed leaves, which are doubly fawed; called The SMOOTH NARROW-LEAVED ELM, and by some The UPRIGHT ELM.”

These six species of MILLER are all of them comprehended in the *ULMUS Campestris* of LINNEUS; so that MILLER is silent as to the second and third species of LINNEUS; and so is HANBURY, who only treats botanically of one species; namely, the *ULMUS Campestris* of LINNEUS: He nevertheless enumerates seven SORTS:

1. The true English Elm.
2. The Narrow-leaved Cornish Elm.
3. The Dutch Elm.
4. The Black Worcestershire Elm.
5. The Narrow-leaved Wych Elm.

6. The

6. The Broad-leaved Wych Elm.

7. The Upright Wych Elm.

In another part of his work he says, "It would be endless, as well as needless, to enumerate the sorts of Elms: I have counted in my time more than twenty, in woods, hedges, &c. that have fell in my way when in quest of plants." The fact is, no genus of plants whatever is more incomprehensible to the Botanist than the *Ulmus*; for although we see among the cultivated Elms of this country, individuals as different from each other as are some individuals of distinct genera, yet every man who has attended closely to the several kinds of Elms growing in different parts of the kingdom, must have observed such a chain of intermediate kinds as renders classification extremely difficult; and must frequently have met with an individual, which he was puzzled to find a name for. LINNEUS, no doubt, having experienced this, lumped the whole mass of cultivated Elms in one species,—The *Ulmus Campestris*:—and as a BOTANIST he may be right: as PLANTERS, however, we must beg leave to attempt a separation; and yet we are obliged to confess, that we cannot describe more than two obviously distinct VARIETIES. With respect to the second and third species of LINNEUS, we take it for granted they have not yet been introduced, or are but little known, in this country (if we are wrong, we beg to be set right): We therefore proceed to

ULMUS Campestris: The CULTIVATED ELM; a tall deciduous tree; found growing more or less, in one or other of its varieties, in hedges about villages, in most parts of Europe.

The CULTIVATED ELM. Notwithstanding the chain of varieties abovementioned, if we examine the two extremities, we shall find two plants very different from each other in their general appearance; and sufficiently distinct in the analysis to be considered, in a work of this nature, as distinct species: The leaf of the one is nearly oval, with an obtuse lance-like point; that of the other nearly circular, saving a narrow slender point, growing as it were out of the periphery of the circle. The membrane of the one is gross and rigid, of the other comparatively thin, delicate, and supple: When held against a strong light, the former appears opaque; the latter, comparatively transparent. The nerves of that are stronger, set closer, and run more parallel; of this, more slender, fewer

in number, and divide more into branches. *That*, in its general appearance, bears some resemblance to the leaf of the Chesnut; *this*, a very strong one to that of the Hazel. The branches of the Coarse-leaved sort are clean, straight, and slender, with a silvery bark; those of the Fine-leaved kind more divided, run shorter lengths, and are covered with a less delicate bark. The general tendency of the latter is more upright, being easily trained to a great length of stem; that of the former is to divide into spreading arms, and when attempted to be trained up with a tall straight stem, generally grows stooping with a nodding head like the panicles of an oat. The Coarse-leaved kind matures its seed in this island, and is probably a native; the Fine-leaved sort seldom if ever perfects its seed with us, and is probably an exotic.

We therefore proceed to treat separately of these two sorts; considering the intermediate kinds as subordinate varieties of these two:

1. The COARSE-LEAVED ELM, or the Chesnut-leaved Elm, or the Broad-leaved Elm, or the Wych Elm, or the North-country Elm.

2. The FINE-LEAVED ELM, or the Hazel-leaved Elm, or the Narrow-leaved Elm, or the South-country Elm.

1. The COARSE-LEAVED ELM will grow to a very great size. Mr. Marsham mentions a Wych Elm by Bradley Church in Suffolk, which in 1754 measured (at five feet high) twenty-five feet five inches and a half, and in 1767 twenty-six feet three inches. The leaves of this species of Elm have been already described to be of an oval figure, with a thick membrane and strong nerves; their size varies with the individuals they grow upon, some trees of this species bearing leaves considerably smaller and *much narrower* than those of some individuals of the Hazel-leaved sort: The common distinction therefore of these two kinds of Elms into *Broad-leaved* and *Narrow-leaved* is altogether improper—their *figures* forbid it: It would be equally proper to distinguish an oval from a circle, by calling the former broad, and the latter narrow.

The outline or general appearance of this tree is sometimes strongly featured, coming near to that of the Oak: In general, however, it is liable to be ragged, rather than irregular, and in point of *ornament* is frequently exceeded by the Lime, the Beech,

Beech, and its sister tree the Fine-leaved Elm. Its *uses* are many. The whole tribe of Elms have a peculiar excellency by which they stand alone, and are rendered in a great measure independent of other woods. The Oak is pre-eminent for durability, the Ash for toughness, the Beech for closeness of texture and cleanness of grain, and the Elm for its tenacity or adhesive quality, being less liable to be split than other woods: This renders it singularly useful for many important purposes. The keels of ships are now almost universally laid with Elm, and sometimes the gunwales, especially of ships of war, are made of this wood; it being less liable to splinter off in action even than English Oak; as keels made of this wood are less apt to split in taking the ground. Another very important use of Elm is for naves of wheels of carriages of every kind, whether of use or of pleasure. There is a sort in Yorkshire peculiarly adapted to this purpose, which goes by the name of the *Nave-Elm*; it is of the Coarse-leaved kind.

The Coarse-leaved Elm may be PROPAGATED from seeds, or by layering. HANBURY says, "In order to propagate them by layers, proper stools for the purpose must be first obtained; to procure which, let a piece of good ground be double dug, and plant Elms of about four or five feet high over it, at the distance of about ten feet: If they make good shoots in the first year after, they may be cut down early in the spring following; if not, they should remain two years before they are headed for stools; which should be by cutting them down to within half a foot of the ground. After they are cut down, they should be suffered to grow undisturbed for two years: The ground between the stools must be dug in the winter, and constantly hoed as the weeds arise in the summer; and at the end of that time, that is two years, the branches growing from these stools will be fit for layering; which may be performed thus: Excavate a piece of ground wide enough to receive a whole branch, and let the hollow be about half a foot deep; then splash the branch with a knife, near the body of the stool, that its head may be more readily brought into the prepared place: Next, thrust an hooked stick into the ground, to hold it close; take off all the superfluous branches, which cross and would otherwise incommode those that are to be continued. After this, cut all the remaining young branches across half through

with the knife; turn the edge towards the end, flitting it about half an inch. When this is done on all the young branches, the mould should be gently put amongst them, and every one of them should have their ends bent towards the stool, that the slit may be open. Lastly, having the whole vacuity filled with its own mould, smooth and even, take the end of each twig off that peeps above the ground, down to one eye, and the branch is layed, and will afford you as many plants as there are buds peeping out of the ground. Proceed in like manner to the other branches of the same stool, then to the next stool in order, and so on until the whole business of layering is finished. By the autumn following, these layers will have taken root, and many of them will have made a shoot of near a yard in length. It is now necessary to take them from their stools, and plant them in some double-dug ground in the nursery. They should be set in rows three feet asunder, and the distance allowed them from each other in the rows ought to be a foot and a half. Here they may stand till they are planted out where they are to remain, with no farther trouble than digging the ground between the rows every winter, and in the summer carefully watching those which shoot out two branches at the head, and nipping the weakest of them off. After the layers are taken up, the stools must have all the wounded parts, occasioned by the former splashing, taken away; the old branches also should be cut off, pretty close to the stem; and in the spring they will begin to shoot out fresh branches again, for a second layering, which will likewise be ready to have the same operation performed the second year after: and thus may this layering be performed on these stools every other year. But nurserymen who would raise great quantities of trees this way, should be provided with two quarters of stools, to come in alternately, so that from one or other of them they may annually receive a crop." We have given Mr. HANBURY's method in his own words, in order to convey to our readers in the fullest manner *his method of layering.*

His method of PROPAGATING the Elm from seeds, we also give at length; for the Elm standing next to the Oak at the beginning of his book, he has treated more fully of that article than any other (the Oak only excepted), and frequently refers

to it in the course of his work. He says, "Let the seeds be gathered the beginning of June, it being the time when they are full ripe. When gathered, spread them three or four days to dry; for if they were to be sown immediately after they were gathered, they would rot. Having been spread about that time, and the mould, which ought to be fresh and good, being in readiness for their reception, mark out your beds four feet wide, and let the alleys between them be a foot and a half or two feet broad. Rake the mould out of the beds until they are about an inch deep; riddle that which came out of the beds into them again, until the bottom of each bed is raised half an inch (*i. e.* half filled) with riddled mould; then gently press the mould down with the back of the spade, and sow the seeds thinly all over it with an even hand, covering them down with fine earth about half an inch deep. When the seeds are all sown this way, the beds should be hooped, and covered with mats, to be shaded in that hot season of the year; and they should also sometimes be refreshed with water: Part of the young plants will come up in about a month, or sooner; the others not till the spring following. From the time the seeds are sown to their appearance above ground, whenever rain falls, be careful to uncover the beds, and as ready to cover them again when the scorching beams of the sun break out. About the end of August, the mats should be wholly taken away, that the plants may be hardened against winter: The spring following, a fresh breed will present themselves among those that came up the summer before. All the summer following they should be constantly kept free from weeds, and watered as often as dry weather shall render it necessary; and in October or spring they may be planted out in the nursery, at the distance before prescribed for the layers, and afterwards should be managed like them."

2. The PINE-LEAVED ELM will also grow to a great height and considerable bulk: We do not however find any tree of this kind upon record. The largest Elms we have seen, of the PINE-leaved sort, grow in the Vale of Gloucester. There are several in the parish of Church-down which girt, at five feet high, from ten to twelve feet. But the finest Elm in the Vale stands in the road between Cheltenham and Tewkesbury,—within a few hundred yards of the Boddington Oak (See QUERCUS). It is known by the name of PIFFER'S ELM; and the turnpike-gate,

the fence belonging to which is fastened at one end to this tree, takes its name from it; being called "Piffe's Elm 'Pike." The smallest girth of this tree, which falls about five feet high, is at present (1783) exactly sixteen feet. At ten feet high it throws out large arms, which have formerly been lopped, but which now are furnished with tree-like shoots, rising, by estimation, to seventy or eighty feet high, with an extent proportionable, exhibiting all together the grandest tree we have seen;—not so much from its present size, as from that fullness of growth and vigour which it now wears. There is an Elm of the Small-leaved sort in Hyde Park whose stem is larger than this; but it is hollow, its head much impaired, and is a mere dotard compared with Piffe's Elm; which we mention 'the rather' as it may be a tree in ages to come, and, standing as it does in a well-foiled country, may swell out to twice its present size.

The leaves of this species of Elm have been already fully described; it remains only to observe, that notwithstanding we are accustomed to see trees of this sort trimmed up to mere maypoles, or at best with close aspiring heads, yet, if planted singly and suffered to form their own head, they will take an outline equal to that of the Beech or the Linden; and where an immediate object or screen is wanted, the Elm has two material advantages: it may be removed when of a great size, and its growth is quicker than that of any other tree which is equally ornamental. The *uses* of this species of Elm are similar to those of the Coarse-leaved kind; and in places where bricks are rendered dear by a want of a proper supply of fuel, as in Surry and Kent, great quantities of this Elm are cut up for studs and weather-boarding for the sides of barns, stables, and even dwelling-houses; and in the southern counties in general it is much used in carpenter's work of all kinds as a substitute for Oak.

The propriety of planting the Elm depends entirely upon the soil: It is the height of folly to plant it upon light sandy land. There is not, generally speaking, a good Elm in the whole county of Norfolk. By the time they arrive at the size of a man's waist they begin to decay at the heart, and if not taken at the critical time, they presently become useless as timber. This is the case in all light soils: it is in stiff strong land

land which the Elm delights. It is observable, however, that here it grows comparatively slow. In light land, especially if it be rich, its growth is very rapid; but its wood is light, porous, and of little value, compared with that grown upon strong land; which is of a closer stronger texture, and, at the heart, will have the colour and almost the heaviness and the hardness of iron: On such soils the Elm becomes profitable, and is one of the four *Cardinal Trees* which ought in preference to all others to engage the Planter's attention.

The method of PROPAGATING this species of Elm is principally by layering (in the manner already described); the seeds not coming to perfection here. HANBURY recommends in very strong terms the grafting what he calls the True English Elm upon the Wych Elm; which he says has a stronger and more porous root, and will thrive upon poorer land. His reasoning, however, seems to flow from a theory perhaps ill grounded, rather than from practice. Nevertheless, as he seems to have taken particular pains in drawing up directions for this operation, we will, for reasons already assigned, transcribe them at length. "The stocks for the purpose should be the Broad-leaved Wych Elm, which must be raised from the seed, and planted out as before. When they have grown two years in the nursery, they will be of proper size to receive the graft; and the last week in January is the best time for the work. If a large quantity of Elm stocks are to be grafted, procure six men in readiness for the purpose. The business of the first man is to take the mould from the stem of the stocks, with a spade, down to the root, laying the top of the root bare; the next man is to follow him with a sharp pruning-knife, cutting off the heads of the stocks, and leaving the stumps to be grafted only about two inches above the root; the third man is the grafter himself, who having his grafts cut about four or five inches in length, all of the young wood, and such as has never bore lateral branches, in a dish, takes out one of them, and holding it in his left hand, the taper end being from him, with the knife that is in his right he takes off a slope about an inch and half or two inches long; and if the grafter be an artist, it will be cut as true as if wrought by a plane. This done, he makes a small cut across,

nearly at the top of the slope, and then proceeds to prepare the stock to receive it, which is effected by sloping off a side of it, of the same length with the sloped graft, that the parts may fit as near as possible. He then makes a cut nearly at the top of the stock downward, to receive the tongue he had made in the graft; and having properly joined them, he proceeds to the next. After the grafter, follows a person with bafs matting, cut into proper lengths; and with these he ties the grafts pretty close to the stock. The fifth man brings the clay, which should have been prepared a week or longer before, and well worked and beaten over, mixed with a fourth part of horse-dung, and some chopped hay, in order to make it hang the better together: with this he surrounds the graft and the stock. Lastly, the sixth man comes and closes the clay, so that there may be no probability of its being washed off. Two or three rows being grafted, let an additional hand or two be employed, either in drawing the earth up above the clay, so that it may be wholly covered, or digging the ground between the rows, and levelling it so that nothing of the performed work may appear, except the tops of the grafts, above ground. The danger of frost renders this precaution highly necessary; for if it should be delayed a night or two, and sharp frosts should happen, the clay will most of it fall off, and thus the work will require to be repeated; whereas, when it is lapped warm in the manner directed, there will be no danger of such an accident. A good workman, with the above-mentioned necessary assistance, will graft about fifteen hundred stocks in a day. In the spring, the buds will swell, disclose, and shoot forth nearly as soon as those of the tree from which they were taken. By the latter end of June, they will be shot a foot and half, when they should be freed from the clay; the matting should be also taken off, and themselves left to sport at ease with all the vegetative powers. At this time, of those which have put forth two shoots, the weakest should be taken up, to strengthen the other, and to lighten the head, which would otherwise be subject to be broken off by high winds. By autumn the shoot will have grown about a yard in length; and in the winter dig the ground between the rows. In this place they may remain till they are of a size to be planted out for

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continuance, with no other trouble than what was directed for the layers; namely, keeping them clear of weeds, digging between the rows in the winter; at the same time taking off all very large side-branches; and in the summer pinching off such young shoots, in the head, as may have a tendency to make the tree become forked. This practice of grafting will be found a valuable improvement of the English Elm, if we consider the nature of the Wych Elm, on which it is grafted. First, the Wych Elm will not only grow to the largest size of all the sorts, but will grow the fastest. However, this is not to be wondered at, if we examine the root, which we shall find more fibrous, and the pores larger and in greater numbers than in any of the other Elms. Now, as all roots are of a spongy nature, to receive the juices of the earth for the nourishment and growth of the tree, that tree must necessarily grow the fastest whose root is most spongy and porous; and therefore the true English Elm, being set upon the root of the Wych, a greater quantity of nutriment is received from the earth for its increase, in proportion as the root of the Wych Elm is more spongy and porous than that of its own sort. Thus the English Elm, on this basis, will arrive at timber many years sooner than those raised by layers, and be also forced to a greater size. If we consider too that the roots of the Wych Elm will imbibe such juices as are proper for the growth of its own sorts, timber thus raised must be better, as the wood of the Wych Elm is so excellent in its kind as to answer the purposes of all the other kinds."

See more of the ELM under WOODLAND.

ZANTHOXYLUM.

LINNEAN Class and ORDER, *Diœcia Pentandria*: Male flowers containing five parts, and female flowers containing one part; upon distinct plants. There are two SPECIES: one of which, with due care, may be enured to this climate.

ZAN.

ZANTHOXYLUM *Clava Herculis*: The **TOOTHACHE-TREE**; a deciduous shrub; native of Jamaica, Carolina, and Pennsylvania.

The **TOOTHACHE-TREE** (so called from its bark being said to be efficacious in that complaint) will grow to the height of about twelve feet. The bark is rough, and armed with short thick spines. The leaves are its greatest ornament; for they are pinnated, are of a fine dark-green on their upper surface, and yellowish underneath, and grow without order on the branches. The folioles are spear-shaped, long; four or five pair are terminated by an odd one, and the whole leaf has much the resemblance of those of the Mastich tree. The flowers come out in loose panicles, from the ends of the branches; they are small, and of little figure, having no petals, though the coloured segments of the calyx have been taken for petals. They are succeeded by roundish capsules, containing the seeds, which hardly ever ripen in England.

There is a *variety* of this genus, with leaves composed of oval, oblong folioles, which have prickly mid-ribs. This difference is permanent from seeds. They are numbered in the nurseries as two distinct sorts; the first is called the Lentiscus-leaved Toothache-tree; the other the Ash-leaved Toothache-tree.

These trees are PROPAGATED from the seeds, which we receive from abroad; and these are seldom less than two, and often three or four, years before they come up. They must be sown deep, in largish pots, filled with a good, light, sandy compost; and after that, the pots may be plunged into some natural soil, in a shady place, and there left undisturbed, except having constant weeding, during the next summer and winter. The spring following they may be taken up and plunged into an hotbed; and this will bring up many of the seeds. They must be next hardened by degrees; and afterwards plunged into their former station, to remain there until autumn. In the ensuing winter they must be preserved in the greenhouse, or under a hotbed-frame; and in the spring they should have a hotbed as before; and then you may expect to see the remainder of the whole crop. The same management must be repeated until the spring following, when they

they must be all shaken out of the pots, and each be planted in a separate pot. Watering should be given them, to settle the mould to the roots ; and they should be plunged into a hotbed as before. After this they must be hardened to the air, and set abroad in a shady place. The plants are now raised ; but they should be treated as greenhouse-plants for two or three years after ; when, in some spring, they may be turned out of their pots, with their mould, into the places where they are designed to remain. The places allotted them should be naturally warm and well-sheltered ; for although they are tolerably hardy when old, they require protection at first ; and with this, nothing but the severest winters can destroy them.

TIMBER.

T I M B E R.

TIMBER is the great and primary object of planting. Ornament, abstracted from utility, ought to be confined within narrow limits. Indeed, in matters of planting, especially in the taller plantations, it were difficult to separate entirely the idea of ornament from that of use. Trees in general are capable of producing an ornamental effect; and there is no tree which may not be said to be more or less useful. But their difference in point of value when arrived at maturity is incomparable; and it would be the height of folly to plant a tree whose characteristic is principally ornamental, when another which is more useful and equally ornamental may be planted in its stead.

Therefore, previous to our entering at large upon the business of planting, it will be proper to endeavour to specify the trees most useful to be planted. In attempting this we must look forward, and endeavour to ascertain the species and proportional quantities of TIMBER which will hereafter be wanted, when the trees now to be planted shall have reached maturity. To do this with a degree of certainty is impossible: Customs and fashions alter as caprice and necessity dictate. All that appears capable of being done in a matter of this nature is, to trace the great outlines, and, by observing

ing what has been permanently useful for ages past, judge what may, in all human probability, be also useful in ages to come.

SHIPS, MACHINES, and
BUILDINGS, UTENSILS,

have been, are, and most probably will continue to be, the consumers of TIMBER in this country. We will therefore endeavour to come at the principal materials made use of in the construction of these four great conveniencies of life. Indeed, whilst mankind remain in their present state of civilization and refinement, they are *necessaries* of life which cannot be dispensed with ; and are consequently objects which the planter ought not to lose sight of, as they include in effect every thing that renders plantations useful ; FENCE-WOOD and FUEL excepted.

SHIPS are built chiefly of OAK : the keels, however, are now pretty generally laid with ELM ; and part of the upper deck of men of war is of DEAL : But these woods bear no proportion, in respect of the quantity used, to the Oak. The *timbers* of a ship are principally crooked, but the *planking* is cut out of straight pieces. In a seventy-four gun ship, the crooked and straight pieces used are nearly equal, but the *planking under water* is of FOREIGN OAK : therefore, of ENGLISH OAK, the proportion of crooked to straight pieces is almost two to one. Masts and yards are of DEAL. The blockmakers use Lignum Vitæ, Box, and other hard woods. Upon the whole, it may be said, that in the construction of a ship, OAK is the only ENGLISH WOOD made use of ; and that of this English Oak,
nearly

nearly two-thirds is requisite to be more or less CROOKED.

BUILDINGS. In the metropolis, and towns in general, DEAL is the prevailing wood made use of by the *house-carpenter* : some OAK is used for sashes, also for window and door-frames, and some for wall-plates ; but in places situated within the reach of water-carriage, DEAL is becoming every day more and more prevalent : Nevertheless, there are many inland parts of the country where the house-carpenters still continue to work up great quantities of OAK and ELM. The *joiner* and the *carver* scarcely use any other wood than DEAL, except in some inland and well-wooded districts, where OAK is still in use for floors and stair-cases. Through the kingdom at large, perhaps three-fourths of the timber used in the construction of buildings is FOREIGN DEAL.

MACHINES. This class comprehends MILLS and other MACHINES OF MANUFACTORY, CARRIAGES of burden and pleasure, IMPLEMENTS OF HUSBANDRY, with the other articles necessary in rural affairs.

The *mill-wright's* chief material is OAK (As to the implements, utensils, and machines of manufactory, they are infinite, and various kinds of wood are worked up in making them).

The *waggon and cart-wright* uses OAK for bodies, ASH for shafts and axles, ELM for naves, and sometimes for fellics and linings.

The *plow-wright's* sheet anchor is ASH : in some counties BEECH is substituted in its stead, for every thing but plow-beams.

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The *coachmakers* use ASH for poles, blocks, splinter-bars, &c. ELM for naves; generally ASH for spokes and fellies; and RATTAN * for pannels.

Gates and Fences are made of OAK and DEAL; sometimes of ASH, ELM, MAPLE, &c. but *posts* are, or ought to be, universally of OAK.

Ladders, of DEAL, OAK, &c.

Pumps and Water-Pipes, of OAK, ELM, ALDER.

Wooden Bridges, River Breaks, and other *Water-works*, principally OAK; some ELM and ALDER under water.

UTENSILS. Under this head we class FURNITURE, COOPER'S WARE, MATHEMATICAL INSTRUMENTS, TRUNKS, PACKING-CASES, COFFINS, &c. &c.

The *cabinet-makers'* chief woods are MAHOGANY and BEECH; next to these follow DUTCH OAK (Wainscot)*, DEAL, ELM; and lastly WALNUT-TREE, CHERRY-TREE, PLUM-TREE, BOX, HOLLY, YEW, and a variety of woods for inlaying and cabinets. In some country places a considerable quantity of ENGLISH OAK is worked up into tables, chairs, drawers, and bedsteads; but in London, BEECH is almost the only English wood made use of *at present* by the cabinet and chair-makers.

Coopers;—OAK (and some CHESNUT) for large casks and vessels: ASH for dairy utensils, butter-firkins, flour-barrels, &c. OAK for well-buckets and water-pails, and in some places for milk-

* The Mahogany of the Bahama-Islands.

pails and other dairy vessels : BEECH for soap firkins, &c.

Turners ;—principally BEECH for large ware, if Beech is to be had ; if not, SYCAMORE, or other clean-grained wood : BOX, HOLLY, &c. for smaller utensils.

Mathematical instrument-makers ; —MAHOGANY, BOX, HOLLY.

Trunk-makers ;—DEAL.

Packing-cases ;—also DEAL.

Coffins ;—OAK, ELM, DEAL.

And finally, the *last-makers*, who work up no inconsiderable quantity of wood, use BEECH for lasts ; ALDER and BIRCH for heels, patten-woods, &c.

We do not deliver the foregoing sketch as a perfectly correct account of the application of woods in this country : The attempt is new, and that which is new is difficult. We have not omitted to consult with professional men upon the subject ; and we believe it to be sufficiently accurate for the purpose of the planter. If we have committed any material error, we ask to be set right. We do not wish to descend to minutiae : it would be of little signification to the planter, to be told what toys and toothpicks are made from : it is of much more importance to him to know, that, of ENGLISH Woods, the OAK is most in demand, perhaps three to one,—perhaps in a much greater proportion ; that the ASH, the ELM, the BEECH, and the BOX, follow next ; and that the CHESNUT, the WALNUT, and the PRUNUS and PINUS tribes are principally

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valuable

valuable as substitutes for OAK and FOREIGN TIMBER. It likewise may not be improper in this place to mention, that the OAK, though of slower growth than the Ash, the Elm, the Beech, the Larch, the Firs, and the Aquatics, is nearly of twice the value of any of these woods at market; therefore, in a private and pecuniary point of view, the OAK is the most eligible tree to be planted: in a public light, it rises above comparison.

HEDGES.

H E D G E S.

THE raising of LIVE HEDGES and HEDGE-ROW TIMBER constitutes no inconsiderable part of the business of planting. The value of good Hedges is known to every husbandman; and notwithstanding the complaints against Hedge-row Timber as being liable to be knotty, &c. the *quality* of the timber itself is not questioned: its faultiness arises wholly from an improper treatment of the tree, and not from the situation of its growth. Indeed, we are clear in our opinion, that, under proper management, no situation whatever is better adapted to the valuable purpose of raising SHIP-TIMBER than Hedges: The roots have free range in the adjoining inclosures, and the top is exposed to the exercise of the winds, with a sufficient space to throw out lusty arms, and form, at a proper height, a spreading head. Thus quickness of growth, with strength and CROOKEDNESS of Timber, are at once obtained.

We are well aware of the injury resulting from woody Hedge-rows to arable inclosures; but every man experienced in rural matters must be convinced that it is not well-trained Timber-trees, but high Hedges and low Pollards, which are the bane of corn-fields. These, forming a high and impervious barrier, preclude the air and exercise so essential to the vegetable, as well as the animal, creation:

in Norfolk, lands thus encumbered are, with great strength and propriety of expression, said to be *wood-bound*. Besides, Pollards and low-spreading trees are certain destruction to the Hedge-wood which grows under them.

Neither of these evils, however, result from tall Timber-oaks, and a Hedge trimmed down to four or five feet high : a circulation of air is, in this case, rather promoted than retarded ; and it is well known that a *trimmed* Hedge will thrive perfectly well under tall stemmed trees, Oaks more especially. We will therefore venture to recommend, for arable inclosures, Hedges trimmed to four or five feet high, with Oak timbers of fifteen to twenty-five feet stem.

But for grass lands, higher Hedges are more eligible. The grasses affect warmth, which promotes their growth, and thereby increases their quantity, though their quality may be injured. Besides, a tall fence affords shelter to cattle, provided it be thick and close at the bottom ; otherwise, by admitting the air in currents, the blast is rendered still more piercing. The shade of trees is equally friendly to cattle in summer, as thick Hedges are in the colder months ; therefore, in the Hedges of grass inclosures, we wish to see the Oak wave its lofty spreading head, whilst the Hedge itself is permitted to make its natural shoots : remembering, however, that the oftener it is cut down the more durable it will be as a fence, and the better shelter it will give to cattle ; more especially if the sides be trimmed the first and second years

years after cutting, in order to give it an upright tendency, and thicken it at the bottom.

Upon bleak hills, and in exposed situations, it is well to have two or even three rows of Hedge-wood, about four feet apart from each other; the middle row being permitted to reach, and always remain at, its natural height; whilst the side-rows are cut down alternately to give perpetual security to the bottom, and afford a constant supply of materials for Dead-hedges and other purposes of Underwood.

Having thus given a general sketch of our ideas as to the different kinds of Hedges most eligible to be raised, we proceed to treat of the method of raising them. In doing this it will be proper to consider,

1. The woods most eligible for Hedges.
2. The time and manner of planting them.
3. The manner of defending the young plants.
4. The method of cleaning and training them.
5. The after-management.

1. The SPECIES OF HEDGE WOOD depends in some measure upon soil and situation. That which is proper for a sound soil in a temperate situation, may not be eligible for a marsh or a mountain: and indeed a fence may be formed of any tree or strong shrub, provided it will thrive in the given situation. Nevertheless, there are some species much more eligible than others; we particularize the following:

The Hawthorn.

The Crab-Tree.

The Aquatic Tribe.

The Holly.

The Furze.

The *Hawthorn* has been considered, during time immemorial, as the wood most proper for live fences. This pre eminence probably arose from the seedling-plants being readily collected in woods and wastes; the method of raising them in seed-beds being formerly, and indeed in some parts of the kingdom even to this day, but little practised. The longevity of the Hawthorn, especially if it be frequently cropped, and its patience in cropping; its natural good qualities as a live fence, and its usefulness as affording materials for dead hedges, are other reasons why it has been universally adopted. Another advantage of the Hawthorn—It will grow in almost any soil, provided the situation be tolerably dry and warm. However, if the soil hath not a degree of richness in itself, as well as a geniality of situation, the Hawthorn will not thrive sufficiently, nor make a progress rapid enough, to recommend it, in preference, as a hedge-wood.

The *Crab-tree*, amongst the deciduous tribe, stands next: indeed, taken all in all, it may be said to rival, if not to exceed, the Hawthorn itself. Its growth is considerably quicker, and it will thrive in poorer soils and in bleaker situations; and altho' it may not be so thorny and full of branches as the Hawthorn, yet it grows sufficiently rugged to make an admirable fence. Add to this, tho' its branches may not be preferable to those of the Hawthorn for *shooting* dead-hedges, they undoubtedly afford a much greater quantity of *stakes*; and no wood
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whatever (the Yew perhaps only excepted) affords better stakes than the Crab-tree. The seedling plants too are readily raised, as the seeds of the Crab vegetate the first year. We do not mean, however, to force down the Crab-tree upon our Reader as being, in a general light, preferable to the Hawthorn : we wish only to state, impartially, their comparative value ; leaving him to consult his own situation and conveniency, and, having so done, to judge for himself. Nevertheless, from what has been adduced, we may venture to conclude, that upon a barren soil, and in a bleak situation, the Crab-tree, as a hedge-wood, claims a preference to the Hawthorn.

The *Aquatics*. As the Crab excels the Hawthorn upon bleak barren hills, so the Aquatics gain a preference in low swampy grounds : for altho' the Hawthorn delights in a moist situation, yet much stagnant water about its roots is offensive to it. Of the Aquatics, the *Alder* seems to claim a preference ; its growth is more forked and shrubby than that of the Poplar or Willow ; and its leaves are particularly unfavoury to cattle. In point of ornament, however, it is exceeded by the *Black Poplar*, which, if kept trimmed, will feather to the ground, and form a close and tolerably good fence.

The *Holly*. Much has been said, and much has been written, of the excellency of Holly-hedges : nevertheless, as fences to farm-inclosures, they still exist in books and theory only ; not having yet been introduced into general practice, we be-

lieve, in any part of the kingdom. Their superiority, however, whether in point of utility or ornament, is universally acknowledged. The perpetual verdure they exhibit, the superior kind of shelter they afford during the winter months, and the everlastingness of their duration (an old decayed Holly being an object rarely to be seen in nature), all unite in establishing their excellency. How then are we to account for the scarcity of Holly-hedges? The difficulty of raising them and the slowness of their growth have been held out as obstacles; and such they are, in truth; but they are obstacles arising rather from a want of proper management, than from any cause inherent in the Holly itself. Thousands of young Hollies have been destroyed by being planted out improperly in the spring, at the time that the Hawthorn is usually planted: and the few which escape total destruction by such injudicious removal, receive a check which cripples their growth, probably for several years.

We do not mean to intimate, that, by any treatment whatever, the progress of the Holly can be made to keep pace with that of the Hawthorn, or Crab: and we are of opinion that it ought, by reason of the comparative slowness of its growth, to be raised *under* one or other of these two plants; more especially under the Crab, which, as has been observed, has a more upright tendency than the Hawthorn, and consequently will afford more air, as well as more room to the Holly rising under it.

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But whilst we thus venture to recommend raising the Holly under the Crab, we are by no means of opinion that it is difficult to raise a hedge of Holly alone. The principal disadvantage arising comparatively from this practice is, that the dead fence will be required to be kept up at least ten or twelve years instead of six or seven; in which time a Crab-tree hedge, properly managed, may be made a fence, and will remain so without further expence until the Holly become impregnable; when the Crab may either be removed, or permitted to remain, as taste, profit, or conveniency may point out.

The Holly will thrive upon almost any soil, but thin-soiled stony heights seem to be its natural situation. We may venture to say, that where corn will grow, Holly will thrive abundantly; and Holly hedges seem to be peculiarly well adapted to an arable country: for, being of slow growth, and its perspiration being comparatively small, the Holly does not *suck the land* (as the Countryman's phrase is), and thereby rob the adjoining corn of its nourishment, so much as the Hawthorn; which, if suffered to run up to that unpardonable height, and to struggle abroad to that shameful width at which we frequently see it, is not much less pernicious in its effects upon corn-land than the Ash itself.

The *Furze* is rather an assistant Hedge-wood than a shrub, which alone will make a fence. Upon light barren land, however, where no other wood will grow to advantage, tolerable fences may be made with *Furze* alone.

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There is one material disadvantage of Furze as a live Hedge-wood; the branches are liable to be killed by severe frosts, especially if the plants be suffered to grow tall, branchy, and thin at the bottom. It follows, that the best preservative against this malady is to keep them cut or trimmed down low and bushy; indeed, they are of little use as a fence, unless they be kept in that state.

In Norfolk it is a practice, which of late years has become almost universal, to sow Furze-seed upon the top of the ditch-bank; especially when a new Hedge is planted. In a few years the Furzes get up, and become a shelter and defence to the young quick; and, assisted by the high ditch-bank prevalent in that country, afford a comfortable shelter to cattle in winter; besides supplying, at every fall, a considerable quantity of Farm-house fuel.

2. The METHOD AND TIME OF PLANTING HEDGES come next under consideration. The method varies with the soil, and the time with the species of wood to be planted.

In a low level country, ditches become useful as main-drains to the adjoining inclosures; but in a dry upland situation, drains are less wanted; and here the Planter has it in choice whether he will plant with or without a ditch.

The prevailing custom, taking the kingdom throughout, is to plant with a shallow ditch, laying the plants in a leaning posture against the first spit turned upside-down, covering their roots with the
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best of the cultivated mould, and raising a bank over them with the remainder of the excavated earth of the ditch, without any regard being had to the wetness or dryness of the situation. It is a striking fact, indeed, that in the vale of Gloucester—where large plots of naturally rich land are chilled with surface water, and reduced to little value entirely thro' a want of proper sewers and ditches—it is the custom to plant Hedges with a paltry grip of twelve to fifteen inches deep; whilst in Norfolk—a dry sandy country, where the natural absorbency of the sub-stratum is seldom or ever satiated—it is the universal practice to raise Hedges with what is there called a “Six-foot Dyke;” and when fresh-made, they frequently run from six and a half to seven feet; measuring from the bottom of the ditch to the top of the bank.

What may appear equally extraordinary to the rest of the kingdom, the Norfolk Husbandmen, instead of planting the quick at the foot of the bank among the corn mould, lay it in, near the top of their wall-like bank, amongst the crude earth taken out of the lower part of the ditch. It is no uncommon sight, however, in that country, to see the face of the bank, which is usually built very upright, washed down, quick and all, by beating rains, for rods together, into the bottom of the ditch. Nevertheless, if the plants escape this accident, it is astonishing to see the progress they will sometimes make for a few first years after planting. But, as the roots enlarge, they become confined for want of room to range in; and the
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bank naturally mouldering down by time, they are left naked and exposed. It is common to see fine young plants hanging with their heads downward against the face of the bank; and the mould continuing to crumble away from their roots, they at length of course drop singly into the ditch.

If we examine the unbroken flourishing Hedges of that country, of fifteen, twenty, and thirty years standing (for many such there are, especially in the fleg hundreds); we shall find them firmly rooted amongst the corn-mould at the foot of the bank. Nevertheless, the Norfolk farmers in general are so closely wedded to the foregoing practice, that no arguments are sufficient to convince them of its impropriety.

We confess ourselves partial to the superior abilities of the Norfolk Husbandmen, in their general management of rural affairs; and we hold established practices in Husbandry as things too respectable to be wholly condemned without a full and candid examination: we will therefore endeavour, in as few words as possible, to place the Norfolk practice of planting Hedges in its proper light.

There are not, generally speaking, any woodlands in Norfolk. The Hedges, it is true, especially of the eastern part of the county, are full, much too full, of wood, chiefly Pollards. There are some few Timber-groves scattered here and there: but we find none of those extensive tracts of Coppice or underwood in that county which we see in other parts of the kingdom: consequently, the planter of Hedges experiences a scarcity of materials for temporary

porary dead fences, having neither *stakes*, *edders*, nor *rails*, to make them with. Fortunately for him, however, the *soil* is of such a nature (a light sandy loam of great depth, without a single stone to check the spade), that by digging a deep trench, and raising a mound with the soil, none of those materials are wanted. The face of the bank being carried upright, and a little brush-wood set along the top of it, a sufficient fence is formed ; whilst the depth of the ditch prevents the cattle from browsing upon the young plants. By this means Hedges are raised in Norfolk at a trifling expence, compared with the great cost bestowed upon them in some counties, where two rows of posts and rails are used by way of temporary fences. But the difficulty in raising a Live-hedge in the Norfolk manner, arises from the want of a proper place to plant the *Quick* in. If it be put in towards the top of the bank, as is usually done, the evil consequences above-mentioned follow : if, on the contrary, it be laid in near the bottom, the superincumbent pressure of the bank, and the want of moisture in this part of it, render the progress of the young plants slow for the first three or four years ; whilst those above, having loose *made-ground* for their fibres to strike amongst, and having a sufficient supply of moisture collected from every shower by the Brush-hedge, flourish apace ; until the roots having grown too large for the bank, or the upper part of the bank itself having been washed down or mouldered away, their career is stopt, at a time when those below, having struggled thro' the bank, and finding an ample supply of air, moisture, and rich cultivated soil, to work amongst, are
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in their turn beginning to thrive ; whilst their main roots being firmly fixed in the soil itself, there is no fear of their afterwards receiving a check.

Thus it appears that the Norfolk method has its advantage as being cheap, with its disadvantages arising from the want of a proper place to put the plants in.

This is easily obviated by planting with an **OFFSET** ; that is—instead of continuing the face of the bank with one unbroken slope—to set it back a few inches, so as to form a break or shelf, where the **Quick** is planted ; for the obvious purpose of giving the young plants a sufficient supply of moisture, air, and pasturage, until their roots have had time to extend themselves to the adjoining inclosures.

This method of raising a Hedge is not a mere theoretical deduction, but has been practised with success in different parts of the kingdom ; and, in a soil free from stones and other obstructions of the spade, it is perhaps upon the whole the most eligible practice.

But the best Live-hedges we remember to have seen in any part of this kingdom, grow in the neighbourhood of Pickering, in the North Riding of Yorkshire. These Hedges stand nearly upon level ground, with little or no bank or ditch ; so that the plants have free range for pasturage on both sides ; the shallow trenches by which the **Quick** has been planted being now grown up ; having, it is probable, never been scoured out since they were made. Indeed, the assistance of a ditch is not wanted, no temporary

temporary fence whatever being requisite to be made when the Hedge is topped: the stems themselves are a sufficient barrier, standing in rows like the heads of piles, and in such close order that not a sheep nor a hog, nor, in some places, even a hare, can creep between them. In a few years those living piles throw out heads astonishingly luxuriant, and every six or seven years afford an ample and profitable crop of Brush-wood; and this without any expence whatever except that of reaping it: whereas in Norfolk the renewal of the ditch and bank, when the Hedge is cut down, is nearly equal to the first cost; besides the disadvantage resulting from cutting off all communication with the inclosure on the ditch side, and thereby robbing the Hedge of half its natural food.

Therefore, where a ditch is not necessary as a drain, and where the nature of the substratum is such that it cannot be conveniently sunk sufficiently deep to defend the young plants—the most eligible method, in such a situation, is to plant the Hedge upon the LEVEL GROUND, without either bank or ditch, in the manner hereafter described; which method is now practised in the neighbourhood above-mentioned with very promising success.

Having thus endeavoured to deduce from actual practice what may be called the *theory* of raising Hedges, we proceed to the application.

From what has been said, it appears that there are three distinct methods of raising a Live-hedge:

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1. With a ditch and plain bank.
2. With a ditch and offset.
3. Upon level ground.

The first has been already mentioned; and being familiar to every countryman, it is needless to enlarge upon it here.

The second is to be practised in wet situations where surface-drains are wanted, and when the ditch is necessary to be kept open; and likewise in dry situations, where the subsoil is such that a ditch can be conveniently sunk deep enough to guard the young plants in front without an additional fence.

The manner of executing it is this: The ground may either be prepared by fallowing with the plow, or the work may be lined out upon the unbroken ground. In either case the plants should be set *upon* the natural level of the soil, and at the distance of three to twelve inches from the brink of the ditch. This, in ordinary situations, should be about four feet, say a quarter of a rod, wide at the top, and being brought to an angle at the bottom (or as near an angle as tools can bring it), its slope or *sides*, should be about the same dimensions; the cavity of the ditch being made as nearly as may be an equilateral triangle. But if the ditch be wanted as a main-drain or common-sewer, its width should be considerably greater; for in this case it cannot be *pointed* at the bottom, and must therefore have a sufficient width given it at the top to admit of its being made deep enough as a fence, and at the same time wide enough at the bottom to admit the *given* current of water. The bank should rise in front, with

with a slope similar to that of the ditch ; but, as the back should be carried more upright at the foot, swelling out full towards the top, in order to admit the insertion of a Brush-hedge ; or rather, if it can be conveniently had, a Dwarf Stake-and-Edder Hedge, which will effectually compleat the fence to the bank side ; in either case, if any straggling spray overhang the young plants, it should be trimmed off with some sharp instrument, or be beaten flat with the back of a shovel, to prevent its drip from injuring the tender shoots.

The third method, namely, planting without a ditch, is more particularly recommended for upland shallow stony soils. In executing this, the ground must be previously marked out, from four to six feet wide, be reduced to a fine tilth, and made perfectly clean, either by a whole summer's fallow repeatedly stirred with the plow, or by cultivating upon it, in a husband-like manner, a crop of Turnips, or, which is perhaps better, a crop of Potatoes, especially if a little dung can be conveniently allowed them. At the approach of winter, the soil being fine and clean, and the crop, if any, off, gather it up into a highish round ridge or land, and thus let it lie till the time of planting ; when, opening a trench upon the ridge or middle of the land, either with the spade or the plow, insert the plants upright, filling in the mould, and pressing it gently to the roots in the common nursery manner.

The same precautions should be observed in planting of Quick, which have been already recommended under the article TRAINING UP ; namely, the

plants should be sorted as to their size, and should be either cut off within a few inches of the ground, or be trimmed up to single stems.

The *distance* should be regulated by the age and strength of the plants ; from four to six inches is the usual distance ; but if the plants have been previously transplanted from the seed-bed, as they ought ever to be, and have acquired four or five years of age and strength, as we would always wish they should, from six to nine inches is near enough.

The usual *time of planting* is during the spring months of February, March, and April ; and for the Hawthorn, the Crab, and the Aquatics, this is at least the most convenient season ; but for the HOLLY, as has been already observed under that article, Midsummer is the properest time of planting.

Where much *ditching* is required, and hands scarce, the foundations of the banks may be laid any time in winter, and left to settle until the time of planting.

Thus far we have been speaking of raising SINGLE HEDGES, whether of Hawthorn, Crab-tree or Holly ; we will now say a word or two as to the method of raising the HOLLY UNDER THE CRAB or Hawthorn. This may be done two ways ; either by sowing the berries when the Quick is planted ; or by inserting the plants themselves the ensuing Midsummer. The first is by much the simplest, and perhaps upon the whole, the best method. The seeds may either be scattered among the roots of the deciduous plants, or be sown in a drill in front of them : and if plants of Holly be put in, they may either be planted between

tween those of the Crab, &c. or otherwise in front, in the Quincunx manner; the tablet of the offset, when a ditch is made use of, being left broad for that purpose.

If the FURZE be made use of as an assistant Hedge-wood, it is better to sow the seed on the *back* of the bank than upon the *top* of it; for in this case it is more apt to overhang the young plants in the face of the bank; whilst in the other it is better situated to answer the purpose intended; namely, guarding the back of the bank, as well as preventing its being torn down by cattle. The method of sowing the seed is this: Chop a drill with a sharp spade about two-thirds of the way up the back of the bank, making the cleft gape as wide as may be, so as not to break off the lip; and having the seed in a quart bottle, stopp'd with a cork and goose-quill, or with a perforated wooden stopper, trickle it along the drill; covering it by means of a broom drawn gently above, and over, the mouth of the drill. This is better than closing the drill entirely with the back of the spade, the seeds being sufficiently covered without being shut up too close, whilst the mouth of the drill is left open to receive the rain-water which falls on the top of the bank. One pound of seed will sow about forty statute rods. The French seed is the best, as the plants from this seldom mature their seeds in this country, and consequently are less liable to spread over the adjoining inclosure. It may be had at the seed-shops in London for about fifteen pence a-pound.

If a fence be required of Furze alone, a similar drill should be sown on the other side of the bank;

and when the plants are grown up, the sides should be cut alternately.

Thus much as to *planting* the FENCE; we now proceed to the method of planting HEDGE-ROW TIMBER. It has already been given in opinion, that no situation whatever is better adapted to the raising of ship-timber than Hedges; and we are clearly of opinion, that in these alone a sufficient supply, of crooked timbers at least, might be raised, to furnish perpetually the Navy of Great Britain. It is a striking fact, that in Norfolk, where there is very little Oak, except what grows in the Hedges, and even in these, for one timber-tree there are ten pollards, yet the country experiences no want of oak-timber.

But whilst we recommend the Oak, as eligible to be planted in Hedges, we beg leave to condemn, as unfit for that purpose, every other tree whatever (except perhaps the Aquatics in a marsh, the Beech and Pine-tribe upon a barren mountain, or the Elm where Oak has lately occupied the soil) and, more especially the Ash; not only as being the greatest enemy to the farmer, but because the excellency of Ash-timber arises from a length of stem, and cleanness of grain: groves, therefore, and not Hedges, are the natural situation of the Ash; and, generally speaking, of every other timber-tree, the Oak only excepted.

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The method of raising the Oak in Hedges, may either be by sowing the acorns, or planting the seedlings, at the time of planting the fence-wood : we would wish to recommend the practice of both ; namely, to plant a well-rooted, thriving nursery-plant (such as have previously been tapped and transplanted) at the distance of every statute rod ; and, at the same time, to dibble round each plant three or four acorns, to guard against a miscarriage, and to give the judicious woodman a choice in the properest plant to be trained.

This distance may be objected to, as being too close ; and so it may in a deciduous Hedge ; but, in a Holly-Hedge, we would not wish to see Oaks stand at a greater distance ; for, situated in a Hedge, they have unlimited room to spread on either side ; and, by standing near each other, they are more likely to throw out main-branches, fit for ship-timber, than they would if they had full head-room. For this reason, it might not be amiss to plant at every half-rod, and, when the Hedge is perceived to begin to suffer, to thin them in the manner most conducive to the ends proposed, holding jointly in view the Fence and the Timber.

3. THE METHOD OF DEFENDING THE YOUNG PLANTS. Little more remains to be said upon this head. The ditch, bank, and dwarf-hedge have already been fully described ; and this is by much the cheapest, and a very effectual, method where it can



be conveniently practised; but where the nature of the soil is such that a ditch sufficiently deep to defend the young plants cannot be sunk but at too great an expence, some other expedient must be sought for.

Posts and rails wound with bushes in the Yorkshire manner, are an effectual fence; but they are expensive in the extreme.

In Surry and Kent, the prevailing practice is to set a strong Stake-and-Edder-Hedge behind the Quick, and throw rough bushes into a shallow ditch in front: this in a Coppice-wood country may be done at a reasonable expence, but it is by no means effectual.

In some places Wattle-hedges are used, and in others Furze-faggots set in close order are found effectual for this purpose: in short, almost every country affords its own peculiar materials, and every judicious planter will endeavour to find out those which are most eligible.

4. THE METHOD OF TRAINING. Much, very much indeed, depends upon this part of the business; nevertheless, it is the common idea of planters of Hedges every-where, that having performed the business of *planting*, and having *made* a fence sufficient to guard the plants at the time of planting, *their* part is *finished*; the rest is of course left to nature and chance.

The repairing of the fence,

The cleaning, &c. of the plants, and the

Trimming or pruning them, are not however less necessary operations, than the planting and fencing; for without proper attention to those, the expence
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bestowed upon these is only so much thrown away. A single gap, especially where sheep are to be fenced against, may cause to be undone in half an hour what has been doing for two or three years.

In this point of view a deep ditch-fence is preferable to one raised upon the ground, provided the ditch be kept *pointed*; for without this precaution, a ditch, unless it be very deep indeed, must not be depended upon as a fence either against cattle or sheep; but neither the one nor the other will trust themselves in a ditch without a bottom for them to stand upon; nothing indeed is more terrible to them; especially if part of the mould be formed into a sharp Banklet placed on the outer brink of the ditch.

Hares are great enemies to young Hedges: a ditch-fence is the best preservative against them (paling or other close fences only excepted). An offset, however, is favourable to them; they will run along it, and crop the plants from end to end: therefore, where hares are numerous, a tufted branch of Furze, Thorns, Holly, or other rough wood, should be stuck here and there upon the platform, to prevent their running along it.

The next business is weeding either with the hoe or by hand; the former is more eligible where it can be used, as breaking the earth about the roots of the plants is of great service.

Fern is a great enemy to Quick; it is difficult to be drawn by hand without endangering the plants, and being tough, it is equally difficult to be cut with the hoe; and, if cut, will presently spring up again. The best manner of getting rid of it, when got to a

head, is to give the stem a twist near the root, and let the top remain on to wither and die by degrees : this not only prevents its immediate springing, but to all appearance destroys the root.

Thistles, Docks, and other tall Weeds, are equally injurious to the tender plants, in robbing them of their nourishment and drawing them up weak and slender, or smothering them out-right, if not timely relieved by the fostering hand of the planter. Even the Grasses are offensive, and should be extirpated with all the care and attention necessary in a seed-bed or nursery.

Nor is it enough to defend the young plants from animal and vegetable intruders ; the plants themselves must be taught how to grow, so as to best answer the purpose for which they are intended.

The Hawthorn is naturally a shrubby plant, throwing out strong lateral shoots down close to the ground ; more especially when planted by the side of a ditch, which, by giving room, favours this propensity. These horizontal branches, of course, draw off their share of nourishment from the root ; which nourishment would be better expended upon the more upright shoots. They are at the same time in the weeder's way, and by straggling across the ditch, become a temptation to cattle. They should therefore from time to time be struck off with a sharp instrument, either of the hooked or the sabre kind.

In performing this, one rule must be observed invariably ; that is, to leave the under-shoots the longest, tapering the hedgeling upwards ; being very careful however not to top the leading shoots ; for
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by doing this, the upward tendency of the hedge will be checked ; and, whilst its face is kept trimmed in the manner here described, there is no fear of its becoming thin at the bottom.

Thus far we have been speaking of the method of training the SINGLE HEDGE, whether of Crab or Hawthorn. In raising the HOLLY under either of these plants, a different kind of pruning is necessary : for notwithstanding the Holly will struggle in a surprising manner under the shade and drip of other plants, yet the more air and head-room it is allowed, the greater progress it will make. In this case, therefore, the deciduous plants should be pruned to single stems in the nursery manner ; for all that is required of these is strength and tallness, the Holly being a sufficient guard at the bottom.

This may be thought an endless business by those who have not practised it ; but is it not equally endless to prune the young plants of a nursery ? And we here beg leave to remind the young planter, that if he does not pay that care and attention to his hedgelings, in every stage of the business, as he does to his nursery rows, he is a stranger to his own interest. The advantage of obtaining a live-fence *upon a certainty* in seven or eight years, compared with that of *taking the chance* of one in fifteen or twenty, is scarcely to be done away by any expence whatever bestowed upon planting and training it.

We are indeed so fully impressed with this idea, that we believe every gentleman would find his account in having even his single Hedges trained with single stems, in order that they might the sooner arrive

arrive at the desirable state above described,—a *range of living piles*. We beg to be understood, however, that we throw this out as a hint to those who wish to excel in whatever they undertake, rather than to recommend it as a practice to Hedge-planters in general.

Nevertheless, we recommend in general terms, and in the strongest manner, to keep the face of a young Hedge *trimmed*; or, if the plants be browsed by cattle, or otherwise become stunted and shrubby, to cut them down within a few inches of the ground; and by this and every other method promote as much as possible their upward growth. It is some time before a young Hedge becomes an absolute fence against resolute stock; and the shortest way of making it a *blind* is, by encouraging its upward growth, to raise it high enough to prevent their looking over it; and, by trimming it on the sides, to endeavour to render it thick enough to prevent their seeing through it; giving it thereby the appearance, at least, of a perfect fence.

A *pruned* Hedge requires a different treatment to perfect it as a fence. As soon as the stems have acquired a sufficient stability, they should be cut off Hedge-height; and, in order to give additional stiffness, as well as to bring the live-stakes into drill, some strong dead-stakes should be driven in here and there. This done, the whole should be tightly eddered together, near the top.

As an adequate fence against horned cattle, the stems are required to be of considerable thickness; but as a sufficient restraint to sheep only, strong plants

plants may be thus treated a few years after planting; especially those of Crab-tree. Upon a sheep-farm, pruning of plants would be eligible, were it only for the purpose of getting their heads out of the way of those most dangerous enemies.

5. THE AFTER MANAGEMENT. There is one general rule to be observed in this business;—*cut often*: for the countryman's maxim is a good one;—"Cut thorns and have thorns."

The proper length of time *between the cuttings* depends upon the plant, the soil, and other circumstances: seven or eight years may be taken as the medium age at which the Hawthorn is cut in most countries.

In Norfolk, however, the Hedges are seldom cut under twelve to fifteen years; and are sometimes suffered to run twenty and even thirty years without cutting! The consequence is, the stronger plants have by that time arrived at a tree-like size, whilst the underlings are overgrown and suffocated: the number of stems are reduced in proportion, and at that age it is hazardous to fell the few which remain.

In Surry and Kent seven or eight years old is the usual age at which the Farmers cut down their Quick Hedges: and in Yorkshire they are frequently cut so young as five or six. This may be one reason of the excellency of the Yorkshire Hedges; for under this course of treatment every stem, whether strong or weak, has a fair chance: the weak ones are enabled to withstand so short a struggle, whilst the large ones are rather invigorated than checked by such timely cropping.

With

With respect to the *first cutting*, this also must be guided by circumstances : a full-stemmed thriving Hedge may stand from twenty to thirty years between the planting and the first fall ; but if the plants get mossy, or grow shrubby and flat-topped, or put on any other appearance of being diseased or stunted ; or if they are unequal in strength, so that the weaker are in danger of suffering ; or if a young Hedge be much broken into gaps, or any other way rendered defective as a fence, the sooner it is cut down the better ; for time will not mend it, and tampering with it will make it worse : whilst, on the contrary, cutting it down within a few inches of the ground, will give a salutary relief to the roots, and the fresh shoots will furnish a full supply of stems, without which no Hedge can be deemed perfect.

The usual *time of cutting* is during the spring months of February, March, April. The Hawthorn, however, may be cut any time in winter ; and it is observable, that the shoots from the stools of Hedges cut in May, when the leaves were breaking forth, have been equally as strong as those from Hedges felled early in the spring. This late felling, however, is not recommended as a practice ; the brush-wood cut out at that time, being of less value than that which is cut when the sap is down.

The *methods of cutting* are various. In Surry and Kent, the general practice is to fell to the ground, scour out the ditch, set a Stake-and-Edder Hedge behind or partially upon the stubs, and throw some rough thorns into the ditch.

In

In Norfolk there are two ways practised: one, to cut within a few inches of the face of the bank, remake the ditch and bank, and set a brush-hedge as for the original planting: the other is called *Buck-stalling*; which is to leave stems about two feet long, without repairing the bank or setting a Hedge; and only shovelling out the best of the mould of the ditch to form the bottoms of dung-hills with. This is a much cheaper way than the other, and where the Hedge stands at the foot of the bank, and remains full stocked with stems, it is not ineligible; especially if a few of the slenderest of the old shoots be layered in between the bank and the stems, and kept there by a coping sod taken from the foot of the back of the bank: but when the roots lie high in the bank, and are of course more or less exposed, by the soil's mouldering away from them into the ditch, such treatment is destructive to the Hedge; which, in this case, requires to be cut down within a few inches of the roots every eight or ten years, the ditch to be scoured, and the bank to be faced and made fenceable by a Brush-Hedge. This circumstance alone furnishes sufficient argument against planting high in the bank.

In Hertfordshire, Gloucestershire, and some parts of Yorkshire, *plashing* is much in use. This is done by cutting the larger stems down to the stub, and topping those of a middling size Hedge-height by way of stakes, between which the most slender are interwoven, in the wattle-manner, to fill up the interstices and give an immediate live-fence. If
live

live stakes cannot be had, dead ones are usually driven in their stead : and in order to keep the plashes in their places, as well as to bring the stakes into a line and stiffen the whole, it is customary in most places to edder such Hedges.

If the stems alone are not sufficient as a fence, this method of treatment may in some cases be eligible, provided it be properly executed : much, however, depends upon the manner of doing it ; many good Hedges have been spoiled by plashing. The plashers should be numerous, and should be trimmed to naked rods, in order that their spray may not incommode the tender shoots from the stools below : they should be laid in an ascending direction, so that they may be bent without nicking at the root, if possible : such as will not stoop without danger of breaking, should be nicked with an *upward* not with a *downward* stroke : *that*, if properly done, gives a *tongue* which conducts the rain-water from the wound ; *this*, a *mouth* to catch it.

However, in cases where the *stems* stand regular, and are of themselves stiff enough for a Fence, or where they can be readily made so by driving large stakes in the vacancies and weak places, plashing and every other expedient ought to be dispensed with : — where, upon examination, the stems are found insufficient, it is generally the best practice to fell the whole to the ground, and train a set of new ones.

In case of gaps or vacancies too wide to be filled up by the natural branches of the contiguous stools, they should be filled up by *layering* the neighbour-
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ing young shoots, the first or second year after felling; being careful to weed and nurse up the young layers until they be out of harm's way. If such vacancies be numerous, it is best to keep the whole Hedge, let its situation be what it may, trimmed low, in order to give air and head-room to the layers.

All renewed Hedges, whether layered or not, should be trimmed on the sides the first and second years after renewal; at the same time weeding out the brambles, thistles, dock, and every other *weed*, whether herbaceous or ligneous; which, by crowding the bottom, prevent the young branches from uniting and interweaving with each other.

The proper time for performing this is when the thistles are breaking into blow, before their seeds have acquired a vegetative body. The large Spear-Thistle (*Carduus lanceolatus*), so mischievous in young Hedges, and so conspicuously reproachful to the Farmer when its seeds are suffered to be blown about the country, is a biennial plant, which does not blow till the second year; when, having produced its seed, the root dies: it is therefore unpardonable to neglect taking this in the crisis; for by so doing the whole race becomes at once extirpated.

The fittest instrument for the purpose of trimming and weeding is a long hook, or rather a long straight blade with a hooked point, which is convenient for cutting out the brambles and weeds that grow in the middle of the Hedge, as well as for other purposes. We will venture to say, that whoever puts this piece of husbandry in practice once will
not

not neglect doing it a second time; the uses, as well as the neatness, resulting from it are numerous, and the expence of performing it little or nothing.

If the Hedge be intended to run up, either as a source of useful materials, or as a shelter in Grass-land inclosures, the leading shoots should not be touched; nevertheless, it ought, in these two early trimmings, to be kept thin towards the top, leaving it to swell out thicker towards the bottom: but, if it be intended to be kept down, as we have already said it ought to be between arable inclosures, the leading shoots should be cropped low both the first and the second year, in order to check its upward tendency, and give it a dwarfish habit; and the cropping must be repeated from time to time, as occasion may require.

A Hedge under this treatment becomes a perpetual Fence, and its duration may be deemed everlasting. The age of the Hawthorn is probably unknown; but supposing that it will bear to be felled every ten years for two hundred years, during which time there will be twenty falls of wood (what a mountainous pile for one slip of land and one set of roots to produce!) may we not be allowed to suppose that a similar hedge, kept in a dwarfish state (in which state its produce, and consequently its exhaustion, could not be one-tenth so much as that in the former supposition) would live to the age of three or four hundred years? Tenants have only a temporary property in the hedges of their respective farms; and it is the business of landlords or their agents to see that they are properly treated. The value of an estate is
height-

heightened or depreciated by the good or bad state of its fences ; which, it is well known, are expensive to raise, and, when once let down, are difficult to get up again.

With respect to the rough and the worn-out Hedges, which constitute a large majority of the Hedges of this country, it is not an easy matter to lay down any precise rules of treatment. If the ground they grow in be sufficiently moist, they may be helped by felling and layering in the manner already described, or by filling up the vacancies with young quicks, or with the cuttings of fallow, elder, &c. &c. first clearing the ground from ivy and other encumbrances ; but, in a dry bank which has been occupied by the roots of trees and shrubs for ages, and which by its situation throws off the rain-water that falls upon it, there can be little hope either of plants or cuttings taking to advantage.

The best assistance that can be given in this case is to drive stakes into the vacancies, and interweave the neighbouring boughs between the stakes, training them in the espalier manner : or, if the vacancies be wide, to plash tall boughs into them.

These, however, are only temporary reliefs ; for if the bodies of the plants themselves be suffered to run up and draw the nourishment from the plashers, the breaches will soon be opened again, and it will be found difficult to fill them up a second time : the only way by which to render this method of treatment in any degree lasting, is to keep the whole hedge trimmed as snug and low as

the purpose for which it is intended will permit ; weeding it with the same care as a young Hedge. By this means the vacancies in time will grow up, and one regularly interwoven surface will be formed.

After all, however, an old worn-out Hedge, with all the care and attention that can be bestowed upon it, cannot continue for any length of time ; and whenever it verges upon the last stage of decline, it is generally the best management to grub it up at once, and raise a new one in its place ; otherwise the occupier must be driven, in the end, to the humiliating and disgraceful employment of patching with dead Hedge-work.

We are happy in having it in our power to say, that the practice of *replanting* Hedges has, of late years, become prevalent in a county which has long taken the lead in many important departments of husbandry ; and although we have had occasion to censure some of its practices, with respect to Fences, we have great pleasure in giving to it due praise in this particular ; we speak of the county of Norfolk. The best way is to level the old bank about Michaelmas, in order that the mould may be thoroughly moistened by the winter's rains, and tempered by the frosts. The roots and old stems will, in general, more than repay the expence of grubbing and levelling, and when the old stools are numerous, and fuel is dear, will, sometimes, go a good way towards raising the new Fence. One great advantage arising from this practice

practice, in an arable country, is the doing away the crookedness of old Hedges.

There is one general rule to be observed in renewing a Hedge in this manner, which is to plant a species of Hedge-wood different from that which formerly occupied the soil; and we know of no better change after the Hawthorn, than the Crab-tree and Holly.

Thus, having mentioned the several ways of raising and repairing LIVE HEDGES, we now come to the training, and general treatment, of HEDGE-ROW TIMBER: and, first, as to the young Oaks, which we recommended to be planted with the Hedge-wood.

The most eligible length of stem has been mentioned to be from fifteen to twenty-five feet; and, with due attention to their leading shoots, there will be little difficulty in training them to that or a greater height. If, by accident or disease, the head be lost, the stem should be taken off at the stub, and a fresh shoot trained. However, in this case, if the Hedge be got to any considerable height, it is best to let the stump stand until the first fall of the Hedge-wood; for then the young tree may be trained with less difficulty.

Next to the danger of being cropt by cattle, is that of the young trees being hurt by the Hedge-wood: first, from their being overhung and smothered amongst it; secondly, from their being drawn up too tall and slender; thirdly, from their being chafed against the boughs by the wind; and, lastly, from their stems getting locked in between

the branches, so as to cause an indenture in the stem, and thereby render it liable to be broken off by the wind. The simplest way of guarding against these evils is to keep the Hedge-wood down to fence-height; otherwise great care and attention are requisite in training Hedge-timber. Even in this case, the plants should be frequently looked over, — to see that the lower parts of them do not interfere with the stems of the Hedge-wood, — to take off, as occasion may require, the lateral shoots, — and to give simplicity and strength to the leaders, until the plants have acquired a sufficient length of stem.

When this is obtained, it may not be amiss to endeavour to throw the general tendency of the head to one or the other side of the Hedge, in order to give air and head-room to the plants, and *crookedness* to the timber. In short, if trees in Hedges are not treated with the same attention as those in Nurseries and Plantations, it were better not to plant them; as they will become an encumbrance to the Hedge, without affording either pleasure or profit to the planter or his successors.

What remain now to be considered are, the GROWN TIMBERS, the TIMBER STANDS, and the POLLARDS, with which old Hedges are frequently stored.

There is not a more absurd practice in the whole circle of rural affairs, than that of making FALLS of HEDGE-ROW TIMBER; which is neither more nor less than for the woodman to begin at one end
of

of the Hedge, and hack down every timber-tree he comes at, whether full-grown, over-grown, or only half-grown, until he reaches the other. The impropriety is the same, whether a young thriving tree be taken down before it has arrived at its full growth, or an old one be suffered to remain standing after it has entered upon the stage of decline.

A timbered estate should frequently be gone over by some person of judgement; who, let the price and demand for timber be what they may, ought to mark every tree which wears the smallest appearance of decay. If the demand be brisk and the price high, he ought to go two steps farther, and mark not only such as are full grown, but such also as are near perfection; for the interest of the money, the disencumbrance of the Hedge and the neighbouring young timbers, and the comparative advantages of a good market, are not to be bartered for any increase of timber which can reasonably be expected from trees in the last stage of their growth.

There are men in this kingdom, who, from mismanagement of their timber, are now losing annually very handsome incomes. The loss of price, which generally follows the refusal of a high offer, the certain loss of interest, the decay of timber, and the injuries arising from the encumbrance of full-grown trees, are irretrievable losses,

which those who have the care and management of timber should studiously endeavour to avoid.

But whilst we thus hold out the disadvantages of suffering timber to stand until it be overgrown, it is far from our intention to recommend, or even countenance, a premature felling,—of Hedge-row timbers more particularly: for, although in woods and close groves a succeeding crop of saplings may repair in some degree the loss of growth in timber untimely fallen, yet it is not so in Hedges, — where sapling stands are liable to be split off from the stool, as soon as they acquire any considerable top; being exposed singly, and on every side, to the wind: and all that can be expected from the stools of trees in Hedge-rows is a sufficiency of shoots to fill up the breach in the Hedge.

With respect to POLLARDS * in Hedges, some general rules are observable. Pollards which are full-grown, but yet remain sound, should be taken down before they become tainted at the heart;—for a good gate-post is worth five shillings; but a Firing Pollard, of the same size, is not worth one shilling. Firing Pollards which, by reason of their decay, or stuntedness, will not, in the course of eighteen or twenty years, throw out tops equal in value to their present bodies, should also be taken down;—for the principal and interest of the money

* Trees which have been *pelled*, topt, or headed down to the stem.

will

will be worth more at the end of that time than the body and top of the Pollard; besides the desirable riddance of such unsightly encumbrances. But in case a Pollard is already so much tainted as to be rendered useless as timber, yet sound enough to all present appearances to throw out in the time abovementioned a top or tops of more than equal value to its present body;—it rests upon a variety of circumstances, whether, in strict propriety of management, such Pollard ought to stand or fall.

We declare ourselves enemies to Pollards; they are unsightly; they encumber and destroy the Hedge they stand in, (especially those whose stems are short) and occupy spaces which might in general be better filled by timber-trees; and, at present, it seems to be the prevailing fashion to clear them away: nevertheless, in a country in which woodlands and coppices are scarce, Hedge-pollards furnish a valuable supply of fuel, stakes, &c.—and every man who clears away the class of Pollards last-mentioned, without planting an adequate quantity of coppice-wood, commits a crime against posterity; more especially in a district which depends wholly upon the sea for a supply of coals. For, although Great Britain is at present mistress of her own coast, what man is rash enough to say, that, amidst the revolutions in human affairs, she will always remain so? She *once* was mistress of the sea at large!

With respect to the **YOUNG TIMBERS** which frequently abound in rough Hedge-rows, we venture to recommend the following management.

Upon estates whose Hedge-timber has been little attended to, (and, we are sorry to say, such are nine-tenths of the estates in the kingdom) the first step is to set out the plants, and clear away the encumbrances.

After what has been said, it may be needless to repeat here, that where the choice rests upon the species of tree, the Oak should invariably be chosen; for every other species we consider as a kind of encumbrance, which ought to be done away as soon as it can with any colour of propriety.

It is bad practice to permit Hedges to remain crowded with timber-stands; they should, in general, be set out single, and at distances proportioned to their respective sizes; so that their tops be not suffered to interfere with each other.

There is, however, one exception to this rule: where two trees, standing near each other, have grown up in such a manner that their joint branches form, in appearance, but one top, they should both be permitted to stand; for if one of them be removed, the other will not only take an unsightly outline, but will receive a check in its growth, which it will not overcome for several years. It is, nevertheless, observable that twin trees, as well as those which are double-stemmed, are dangerous to stock: not only horned-cattle, but even horses, have been known to be strangled by getting their heads locked in between them.

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The method of training the young plants has already been described ; it now only remains to say a few words as to the PRUNING and SETTING-UP Hedge-row timbers.

Low-headed trees have been already condemned, as being injurious to the Hedge, as well as to the Corn which grows under them. To remove or alleviate these evils without injuring the tree itself, requires the best skill of the woodman. The usual method is to hack off the offending bough ; no matter how nor where ; but, most probably, a few inches from the body of the tree, with an axe ; leaving the end of the stump ragged, and full of clefts and fissures, which, by receiving and retaining the wet that drips upon them, render the wound incurable. The mortification in a short time is communicated to the stem, in which a recess or hollow being once formed, so as to receive and retain water, the decline of the tree, though otherwise in its prime, from that time must be dated ; and, if not presently taken down, its properties as a timber-tree will, in a few years, be changed into those of fire-wood only. How many thousand timber-trees stand at this hour in the predicament here described ; merely through injudicious lopping. It is this vile treatment which has brought Hedge-row timber into a disrepute otherwise undeserved.

There is a wonderful similitude in the operations of Nature upon the Vegetable and the Animal
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Creation. A slight wound in the Animal Body soon heals up, and skins over, whilst the wound succeeding the amputation of a limb is with difficulty cicatrized. The effects are similar with respect to the Vegetable Body : a twig may be taken off with safety, whilst the amputation of a large bough will endanger the life of the tree. Again, pare off a small portion of the outer bark of a young thriving tree, the first summer's sap will heal up the wound : if a small twig had been taken off with this patch of bark, the effect would have been nearly the same ; the wound would have been cicatrized, or barked over, in a similar manner ; and the body of the tree as safely secured from outward injury, as if no such amputation had taken place. Even a considerable branch may be taken off in this manner with impunity, provided the surface of the wound be left smooth and flush with the *inner* bark of the Tree ; for, in a few years, it will be completely closed up, and secured from injury ; though an eschar may remain for some years longer. But if a large bough be thus severed, the wound is left so wide, that it requires in most trees a length of time to bark it over ; during which time the body of the tree having increased in size, the parts immediately round the wound become turgid, whilst the face of the wound itself is thrown back into a recess ; and, whenever this becomes deep enough to hold water, from that time the wound is rendered incurable : Nature has, at least,
done

done her part ; and whether or not, in this case, assistance may be given by opening the lower lip of the wound, remains yet (it is probable) to be tried by experiment : until that be ascertained, or some other certain method of cure be known, it were the height of imprudence to risk the welfare of a Tree on such hazardous treatment.

Further, although a branch of considerable size may be taken off close to the body of the Tree with safety ; yet if the same branch be cut *a few inches* from it, the effect is not the same ; for, in this case, the stump generally dies ; consequently the cicatrization cannot take place, until the stem of the Tree has swelled over the stump, or the stump has rotted away to the stem ; and, either way, a mortification is the probable consequence. Even supposing the stump to live, either by means of some twig being left upon it, or from fresh shoots thrown out, the cicatrization, even in this case, will be slow (depending entirely upon the feeble efforts of the bark of the stump) ; and before it can be accomplished, the Tree itself may be in danger. But, had the amputation been made *at a distance* from the stem, and immediately *above a twig*, strong enough to draw up a supply of sap, and keep the stump alive upon a certainty, no risque would have been incurred ; especially if the end of the stump had been left smooth, with the slope on the under-side, so that no water could hang, nor recess be formed.

From

From what has been said, the following general rules with respect to setting up low-headed trees may, we humbly conceive, be drawn with safety : *small boughs should be cut off close to the stem ; but large ones at a distance from it, and above a lateral branch large enough to keep the stump alive.* Thus, supposing the stem of a tree in full growth to be the size of a man's waist, a bough the thickness of his wrist may be taken off with safety near the stem ; but one as thick as his thigh should be cut at the distance of at least two feet from it ; leaving a side branch at least an inch in diameter, with a top in proportion, and with air and head-room enough to keep it in a flourishing state. For this purpose, as well as for the general purpose of throwing light into the head, the standing boughs should be cleared from their lower branches, particularly such as grow in a drooping direction. In doing this no great caution is required ; for in taking a bough from a bough, let their sizes be what they may, little risque can be thereby incurred upon the main body of the tree.

There is another general rule with regard to pruning trees. The bough should be taken off either by the *upward stroke* of a sharp instrument (and, generally speaking, *at one blow*), or with a saw : in the latter case it should previously be notched on the under-side, to prevent its splitting off in the fall. If the bough to be taken off be very large, the safest way (though somewhat tedious) is first to cut it off a few inches from the
stem

stem with an axe, and then to clear away the stump close and level with a saw, doing away the roughnesses left by the teeth of the saw with a plane, or with the edge of a broad-mouthed axe, in order to prevent the wet from hanging in the wound. A saw for this purpose should be set very wide; otherwise it will not make its way through the green wood.

The fittest opportunity for pruning and setting up young timbers, as well as for taking down Pollards and dotard timbers, and clearing away other encumbrances, is when the Hedge itself is felled; and it were well for landed individuals (as for the nation at large) if no Hedge was suffered to be cut down without the whole business of the Hedge-row being at the same time properly executed.

Lastly, with respect to *filling up blanks* in old Hedge-rows with young timber-trees, much may be said, tho' few general rules can be given. Dry banks in general are unfriendly to young trees; those more especially which are already fraught with the roots of other trees or shrubs, as the banks of old Hedge-rows generally are.

There is another circumstance observable in filling up a vacancy caused by felling a grown timber-tree: it is not enough to wait until such time as the old roots are rotten; for, even then, it will be in vain to plant a tree of the same species as that taken down. It is a fact well known in the cyder counties, that when once a piece of ground has worn-out a suit of fruit-trees, it is in vain to think of making it an orchard a second time: the trees
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may be made to *grow*, but never to *thrive* to advantage.

Another thing material in this business is the distance to be observed between the trees and the Hedge. A Hedge-tree should either stand in the line of the fence, or at the distance of three or four feet from it, so that cattle may be able to walk between them without hurting themselves or the fence. A tree which stands near the fence, but not in it, is equally dangerous to the Hedge and to cattle, which coming to it, either by way of a rubbing-post, or for the benefit of its shade, seldom fail of tearing down the bank at least; and it frequently happens, that whilst one of them is standing with its head behind the tree, another takes it by surprise, and forces it over the Hedge.

These particulars being premised, it aptly follows, that before a Hedge-bank can be planted with timber-trees with any prospect of success, it is necessary, in the first place, that the part or parts where the trees are to be planted should be trenched two spits deep, and at least six feet wide, measuring from the Hedge; in order to clear it from roots, and to meliorate the soil. Secondly, that, except the situation be particularly moist, the soil ought to be thoroughly soaked with water at the time of planting, and as often afterwards as the droughtiness of the seasons may require. Thirdly, that in the choice of plants proper for the occasion, the Planter should be guided by the species which last occupied the space now to be filled up. If the part to be planted has never been occupied, then the Oak should

should be invariably chosen; or if it has been occupied by another tree (the Oak itself excepted), the choice ought to be the same: if the Oak, and that lately, it would be injudicious to throw away labour and plants without a prospect of being repaid; therefore, in this case, and in this case only, we recommend the Elm; provided the soil be sufficiently strong: in a light upland soil, the Beech, the Larch, or the Pine-Tribe, should be substituted; or the soil suffered to remain unoccupied until time has rendered it suitable to receive the Oak again.

Lastly, the plants should be set at about three feet distance from the Hedge, should be strong healthy plants, at least ten or twelve feet high, and should be effectually fenced from cattle. This alone is enough to deter a man from an undertaking of this nature; for if the young plants are not effectually guarded against cattle and other stock, all his labour is lost. We know but of one eligible way of getting over this difficulty: the work should not be undertaken at any other time than when the Hedge is felled; upon which occasion it becomes necessary that some temporary fence should be made to guard the young Hedge; and if, instead of placing this immediately behind the Quick, it be set at seven or eight feet from it, so as to include the six-foot slip of trenched ground, the young trees may be secured at a reasonable expence; whilst the slip inclosed may be planted
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with Potatoes, Cabbages, Turnips, &c. until such time as the plants be stout enough to defend themselves; — the face of the Hedge being guarded with thorns placed in the ditch.

W O O D.

WOODLANDS;

O R,

USEFUL PLANTATIONS.

ALTHOUGH it may be a difficult task to distinguish nicely between *useful* and *ornamental* plantations *, yet the distinction between a rough coppice in a reclusive corner of a farm, and a flowering shrubbery under the windows of a mansion, is obvious: the one we view as an object of *pleasure* and amusement, whilst the other is looked upon in the light of *profit* only. Upon these premises we ground our distinction. Under the present head we purpose to speak of plantations whose leading features are of the more useful kind, and whose principal end is profit; reserving those whose distinguishing characteristics are ornamental, and whose primary object is pleasure, for the article GROUND.

Perhaps, it will be expected, that before we begin to treat of the propagation of **TIMBER**, we should previously prove an approach-

* See page 445.

ing scarcity of that necessary article in this country: for it may be argued, that every acre of land applied to the purposes of planting is lost to those of agriculture; and as far as *culturable* land goes, the argument is just. To speak of this subject generally as to the whole kingdom, and at the same time precisely, is perhaps what no man is prepared for.

From an extensive knowledge of the different parts of the kingdom, we believe that the nation has not yet experienced any real want of timber. We are happy to find that in many parts of it there are great quantities now standing; whilst in many other parts we are sorry to see an almost total nakedness. With respect to large well-grown OAK TIMBER, such as is fit for the purposes of SHIP-BUILDING, we believe there is a growing scarcity throughout the whole kingdom.

We will explain ourselves, by speaking particularly as to one district—the Vale of Derwent, in Yorkshire. This district for ages past has supplied in a great measure the ports of Whitby and Scarborough with ship-timber. At present, notwithstanding the extensive tracts of Woodlands still remaining, there is scarcely a tree left standing with a load of timber in it. Besides, the woods which now exist have principally been raised from the stools of timber-trees formerly taken down; the saplings from which being numerous, they have drawn each other up slender, in the grove manner;
and

and consequently never will be suitable to the more valuable purposes of the ship-builder.

When we consider the prodigious quantity of timber which is consumed in the construction of a large vessel, we feel a concern for the probable situation of this country at some future period. A seventy-four gun ship (we speak from *good authority*) swallows up nearly, or full, three thousand loads of Oak timber. A load of timber is fifty cubical feet; a ton, forty feet; consequently, a seventy-four gun ship takes 2,000 large well-grown timber-trees; namely, trees of nearly two tons each!

The distance recommended by authors for planting trees in a *Wood* (a subject we shall speak to particularly in the course of this chapter) in which Underwood is also propagated, is thirty feet or upwards. Supposing trees to stand at two rods (33 feet, the distance we recommend they should stand at in such a plantation), each statute acre would contain 40 trees; consequently the building of a seventy-four gun ship would clear, of such Woodland, the timber of 50 acres. Even supposing the trees to stand at one rod apart (a short distance for trees of the magnitude above-mentioned), she would clear twelve acres and an half; no inconsiderable plot of Woodland. When we consider the number of king's ships that have been built during the late unfortunate war; and the East Indiamen, merchants ships, colliers, and small craft, that are launched daily in the different ports of the kingdom, we are ready to tremble for the consequences. Nevertheless, there are men who

treat the idea of an approaching scarcity as being chimerical; and, at present, we will *hope* that they have some foundation for their opinion, and that the day of want is not near. At some future opportunity we may endeavour to reduce to a degree of certainty, what at present is, in some measure, conjectural. The present state of this island with respect to ship-timber is, to the community, a subject of the very first importance.

However, in a work like the present, addressed to individuals rather than to the nation at large, a true estimate of the general plenty or scarcity of timber is only important, as being instrumental in ascertaining the local plenty or scarcity which is likely to take place in the particular neighbourhood of the planter. This may be called a new doctrine in a Treatise upon Planting. It is so, we believe, and we wish to have it understood, that we address ourselves to the private interest, rather than to the public spirit, of our readers; and we appeal to every man who has had extensive dealings with mankind for the propriety of our conduct.

We are well aware that, situated as this country appears to us to be at present, Planting ranks among the first of public virtues; nevertheless, we rather wish to hold out that *lasting fame* which always falls to the share of the successful planter, and those *pecuniary advantages* which must ever result from plantations judiciously set about, and attentively executed, as being motives of a more *practical* nature.

We

We wish, in the first place, to do away a mistaken notion, that when once a piece of ground is set apart for a plantation, it becomes a dead-weight upon the estate, or a blank in it at least. Nothing can be less true; for plantations, entered upon with judgment, and carried on with spirit, accumulate in value like money at interest upon interest. If an estate after a plantation has been made upon it is not worth more by the trouble and expence of making it, the undertaking was either ill-judged or badly executed.

An ozier-bed comes to profit the second or third year, and a coppice in fifteen or twenty, whilst an Oak may be a century before he reach the most profitable state; but do they not in effect all pay an annual income? Do not estates sell at a price proportioned to the value of the timber which is upon them? and does not this value increase annually? The sweets of a fall are well understood, and the nearer we approach to this the more valuable are the trees to be fallen.

We have some knowledge of a gentleman now living, who during his life-time has made plantations, which, in all probability, will be worth to his son as much as his whole estate, handsome as it is. Supposing that those plantations have been made fifty or sixty years, and that in the course of twenty or thirty more they will be worth 50,000l. may we not say that at present they are worth some twenty or thirty thousand? What an incitement to planting!

Every thing, however, depends upon management. It is not sticking in a thousand or ten thou-

land plants, as if for the sole purpose of saying, "I have done those things," without giving them a second thought, that will ever bring in the profits of planting; yet, how many gentlemen do we see squandering their money, laying their lands waste, and rendering themselves ridiculous, by such management!

The first step to be taken by a man who wishes to serve his family and his country, and at the same time afford amusement and acquire credit to himself, by planting, is to consider well his own particular situation.

Much depends upon LOCALITY, or relative situation, with respect to water-carriage, and a variety of other circumstances; as contiguity to a large town, or a manufacturing place, which generally enhances the value of land, and the price of labour.

Much also depends upon the NATURAL FEATURES, or positive situation of his estate: the hang of a hill which is too steep for the plow, and a swampy bottom too rotten to bear pasturing stock, and which cannot be rendered firm enough for that purpose but at too large an expence, may in general be highly improved by planting.

Again, where the top-soil, or culturable stratum, is of an unproductive nature, whilst a bed of clay, loam, or other good soil lies under it, planting may sometimes be made greatly advantageous. An instance occurs in the Vale of Gloucester, of a coppice which pays at the rate of fourteen or fifteen shillings an acre annually, whilst the
land

land which surrounds it is not worth more than eight or ten shillings. The soil is a *four* clay, and the sub-stratum a calcareous loam. The valuable plantations above-mentioned afford a similar instance; the top-soil is a light unproductive sand, under which lies a thick stratum of strong clayey loam. Wherever we see the Hawthorn flourish upon *bad land*, we may venture to conclude, that, under ordinary circumstances, such land will pay for planting.

But with respect to low lands which wear a profitable sward, and will bear the tread of cattle, or which by judicious draining can be rendered such at a reasonable expence; also up-lands which by proper management will throw out profitable crops of corn and other arable produce, more especially if the sub-stratum is of a nature ungenial to the ligneous tribes; under these circumstances, we are of opinion, planting can seldom be carried on upon a large scale with propriety. Nevertheless, even under these circumstances Belts and other Skreen-plantations upon exposed heights; as well as Sheltering Groves, and stripes or patches of planting to fill up the inconvenient crookednesses of the borders of arable fields; may be productive of real and substantial improvement to an estate.

The next step which a Gentleman ought to take before he set about raising plantations upon a large scale, is to look round his neighbourhood, and make himself acquainted with its present state as to Woodlands, as well as with the comparative value which these bear to arable and grass lands. He must go still farther; he must learn the natural consumption of the country; not only of timber in

general, but of the several species. Nor must he stop here ; he must endeavour to pry into futurity, and form some judgment of the particular species, whether it be Oak, Ash, Elm, Beech, the Aquatics, Pines, or Coppice Woods, which will be wanted at the time his plantations arrive at maturity.

It is possible there may be situations in this island, where, from a super-abundance of Woodlands, it would be unprofitable to plant even hangs, bogs, and bad top-soils : it is not probable, however, that any such places are to be found ; for in a country situated near water-carriage, (and if the present spirit of cutting canals continue to prevail, what part of this island will, a century hence, be out of the reach of water-carriage ?) ship-timber will, in all human probability, always find a market ; and, in situations remote from such cheap conveyance, foreign timber will always bear a price proportionably high ; consequently the timber raised in such a country, in all probability, will find a market in the neighbourhood of its growth.

Before we begin to speak of the several species of plantations or woodlands, and the methods of raising them, it will be proper to enumerate the different species of trees which we conceive as most eligible to be planted for the purpose of timber and under-wood in this country.

Under the article **TIMBER** it appears that
 The Oak,
 The Ash,
 The Elm, and

The

The Beech,
are the four principal *domestic* timbers now in use in
this kingdom : To which must be added

The Pines, and

The Aquatics,

as substitutes for *foreign* timber at present imported
in vast quantities into this island : And to those must
be added, as *underwoods*,

The Hazel,

The Ozier, and

The Sallow,

The Box.

There are four distinct species of WOODLANDS :

Woods,

Timber-groves,

Coppices,

Woody Wastes.

By *Woods* are meant a mixture of timber-trees
and underwood ; by *Timber-groves*, a collection of
timber-trees only, placed in close order ; by *Coppices*,
underwood alone, without an intermixture of tim-
ber-trees ; and by *Woody Wastes*, grass land over-
run with rough woodinesses ; or a mixture of Wood-
land and grassy patches ; which being thought an
object of pasturage, the wood is kept under by be-
ing browsed upon by stock, whilst the grass in its
turn is stunted by the trees, and rendered of an infe-
rior quality by the want of a free admission of sun
and air.

In practice, these Woody Wastes ought first to be
taken under consideration ; for whilst a Gentleman
has an acre of such land upon his estate, he ought
not (generally speaking) to think of setting about
raising original plantations : for if grassiness prevail,
and the soil be unkind for Wood, let this be clear-
ed

receive in transplantation *, and if (as we shall hereafter shew) the interspaces of an infant Wood may for several years after sowing be still cultivated to advantage, the preference we conceive is evidently and beyond all dispute on the side of sowing.

With respect to the arrangement of Wood Plants,—the preference to be given to the *row*, or the *random* manner, rests in some measure upon the nature and situation of the land to be stocked with plants. In boggy bottoms, and against steep hangs where the plow cannot be conveniently used in cleaning and cultivating the interspaces during the infancy of the Wood, either method may be adopted; and if plants or cuttings are to be put in, the *quincunx* manner will be found preferable to any. But in found and more level situations, we cannot allow any liberty of choice: the *drill* manner is undoubtedly the most eligible; and with this method

* We have known an instance of transplanted Oaks remaining upon the ground so long as eight years before they began to move. And let us hear what MILLER says upon this subject; we have no reason to doubt his speaking from his own experience, though he does not particularize it.—“When Oak-trees are cultivated with a view to profit, acorns should be sown where the trees are designed to grow; for those which are transplanted will never arrive to the size of those which stand where they are sown, nor will they last near so long. For in some places where these high trees have been transplanted with the greatest care, they have grown very fast for several years after, yet are now decaying, when those which remain in the places where they came up from the acorns, are still very thriving, and have not the least sign of decay. Therefore, whoever designs to cultivate these trees for timber, should never think of transplanting them, but sow the acorns on the same ground where they are to grow; for timber of all those trees which are transplanted is not near so valuable as that of the trees from acorns.” (ART. QUERCUS.)

of

again are partial to *rows*, whilst others prefer the *random* manner.

The dispute about sowing and planting may in some measure be reconciled in the following manner : Where the strength of the land lies in the sub-stratum, whilst the top-soil is of an ungenial nature, *sow*, in order that the roots may strike deep, and thereby reap the full advantage of the treasures below : but, on the contrary, when the top-soil is good, and the bottom of an opposite quality, *plant*, and thereby give the roots the full enjoyment of the productive part of the soil ; or, under these last circumstances, *sow*, and *tap* the young plants as they stand (with a tapping instrument), and thereby check their downward tendency, and strengthen their horizontal roots.

By *this* method of treating seedling plants, the peculiar advantage of planting is obtained. The dispute therefore seems to rest entirely upon this question : Which of the two methods is least expensive ? To come at this, there are two things to be considered—the *actual expence* of labour and other contingent matters, and the *loss of time* in the land occupied. With respect to the former, sowing is beyond comparison the cheapest method ; but in regard to the latter, planting may seem to gain a preference ; for the seed-bed is small compared with the ground to be planted, and whilst that is rearing the seedling plants, this continues to be applied to the purposes of husbandry. However, if we consider the check which plants in general receive

of raising a Wood we will begin to give our directions.

But before we enter upon the immediate subject, it will be proper to premise, that, previous to the commencement of any undertaking of this nature, it would be advisable that the spot or spots intended to be converted into Woodland, should be determined upon, — the quantity of land ascertained, — and the whole (whether it be entire or in detached parts, and whether it be ten acres or a hundred) divided into *annual sowings*.

The exact number of these sowings should be regulated by the uses for which the Underwood is intended. Thus, if, as in Surrey, stakes, edders, and hoops are saleable, the suite ought to consist of eight or ten sowings; or if, as in Kent, hop-poles are in demand, fourteen or fifteen sowings will be required; and if, as in Yorkshire, rails be wanted, or, as in Gloucestershire, cordwood be most marketable, eighteen or twenty sowings will be necessary to produce a regular succession of *annual falls*.

Many advantages will accrue from thus parcelling out the land into a suite of sowings: the business, by being divided, will be rendered less burdensome; a certain proportion being every year to be done, a regular set of hands will, in proper season, be employed; and, by beginning upon a small scale, the errors of the first year will be corrected in the practice of the second, and those of the second in that of the third. The produce of the intervals will fall into regular course; and, when the whole is completed, the falls will follow

flow each other in regular succession. In short, the entire business, from beginning to ending, becomes methodical, and, to a contemplative mind, cannot fail of becoming pleasurable.

If it be found convenient to hasten the business, two or three divisions may be sown in one year, the separate falls being marked by the first cutting. This, though by no means equal to regular sowings corresponding to the intended falls, is much better than hurrying over the whole business at once; — a piece of rashness which no man who works upon an extensive scale should be guilty of.

The principal objections to raising Woodlands in this progressive manner, is the extra trouble in fencing. However, if the sowings lie detached from each other, the objection falls; if, on the contrary, they lie together, or in plots, let the entire plot be inclosed at once; and if it contain a number of sowings, some sub-divisions will be necessary, and the annual sowings of these sub-divisions may be fenced off with hurdles, or other temporary contrivance. If the adjoining land to be sown be kept under the plow, little temporary fencing will be wanted.

It may be further necessary, before we enter upon the business of sowing, to give some directions as to *fencing*; for, unless this be done effectually, that will be labour lost.

In raising a Woodland from seeds, it is not only necessary to fence against cattle and sheep, but against hares and rabbits also, especially if they be numerous. Nothing less than a close fence is adequate to this purpose. Where the soil will admit of a ditch being sunk, a ditch, bank, and dwarf-

dwarf-paling, may be raised, in the manner already described under the article FENCES; except that, instead of a stake-and-edder-hedge, a close paling be set upon the bank, in the following manner.

Before the bank be finished, the posts, about five feet long, should be put down, their lower ends being first *charred* (superficially burnt) to prevent their rotting. One rail is sufficient. To this the upper ends of the pales are nailed, their lower ends having been previously driven into the crown of the bank. The pales should be about three feet long, and ought to be made of Oak, or the bottom parts will soon rot off.

The fence is the stronger, and more effectual, if the ditch be made on the outer-side of it, and the paling set so as to lean outwards; but the Quick stands a much better chance of being reared on the inner-side of the paling, next to the seedling plants: therefore, the most prudent method of making a fence of this kind, is to make the ditch on the outside, without an off-set, leaning the paling over it, and planting the Quick at the foot of the bank, on the inner-side: it then becomes what it ought always to be considered, — a part of the *Nursery*.

This, however, is an expensive fence, and is better suited to a small than a large scale; and if, instead of the dwarf-paling, a close rough stake-and-edder hedge be set upon the bank, it will (provided it be well made and carefully attended to from time to time, and the *mues*, if any be made, stopp'd with a rough bush, and a stake driven through it),

continue

continue to be effectual against *hares* for a considerable time ; and against *rabbits*, nothing less than death is effectual.

At length we come to treat particularly of the method of raising a Wood upon land sufficiently sound, and sufficiently level to be cultivated conveniently with the plow.

The preparation of the ground.—If the soil be of a stiff clayey nature, it should receive a whole year's fallow, as for wheat ;— if light, a crop of turneps may be taken ; at all events, it must be made perfectly clean before the tree-seeds be sown, particularly from perennial root-weeds ; for when once the seeds are sown, all further opportunity of performing this necessary business is, in a great measure, lost. If the situation be moist, the soil should be gathered into wide lands ; not high, but sufficiently round to prevent surface-water from lodging upon them.

The time of sowing is either autumn or spring. October may be called the fittest month for the autumnal sowing, and March for the spring sowing. A man of judgement, however, will attend to the season, and to the state of his soil, rather than to the Calendar.

The method of sowing is this :—The land being in fine order, and the season favourable, the whole surface should be sown with Corn or Pulse, adapted to the season of sowing : if in autumn, Wheat or Rye may be chosen ; in spring, Beans or Oats. Whichsoever of the three species of Corn is adopted, the quantity of seed should be less than usual, in
order

order to give a free admission of air, and prevent the crop from lodging.

The sowing of the grain being completed, that of the Tree-seeds must be immediately set about. These must be put in in lines, or drills, *across* the lands, and in the manner best adapted to their respective natures : Acorns and Nuts should be dibbled in, whilst Keys and Berries should be scattered in trenches or drills, drawn with the corner of a hoe, in the manner the gardeners sow their peas.

The distance which we recommend to be observed between the rows is a quarter of a statute-rod (four feet and one and an half inch). This may in theory, seem to be an unnecessary precision ; but in practice, there are many conveniencies accrue from it. In setting out the distance between the drills, a land-chain should be used, and not a line, which is subject to be shortened or lengthened by the weather. A chain is readily divided into rods, and the quarters may be distinguished by white paint, or other obvious marks. Stakes being driven at the ends of the drills, a line must be stretched, to dibble or draw the trenches by *.

If the plot be extensive, *glades*, for the purpose of roads, must be left at convenient distances.

* It may be unnecessary to observe, that the drills should be exactly perpendicular to the range of stakes, otherwise the measurement will be false. If the sowings or quarters could be so laid out, that the drills may be of some determinate length, as twenty rods for instance, the business of measuring would be rendered still more easy.

The species of underwood must be determined by the consumption, or demand, peculiar to the country in which it is intended to be raised. In Surrey, where stakes, edders, and hoops, are in demand, the Oak, the Hazel, and the Ash, are esteemed valuable as underwood. Upon the banks of the Wye, and the country round about, in Herefordshire, Monmouthshire, and Gloucestershire, where great quantities of charcoal are made for the iron-forges, Beech is the prevailing underwood; but whether from choice or from its thriving well upon those bleak mountains, we cannot say. The Oak, the Ash, the Beech, the Birch, the Hazel, the Box, may have their peculiar excellencies in different countries, and the choice is left to the person who has the care of the undertaking.

The species of timber has been already determined upon; the Oak being the only tree admissible into a Wood. The usual space allowed to timber-trees, standing amongst underwood, is thirty feet: two rods (thirty-three feet) will not be found, when the trees have fully formed their heads, too wide a space. Therefore, every eighth drill at least should be sown with acorns, dibbled in about six inches asunder *.

The Oak and the Hazel, rising the first year after sowing, their respective drills will be sufficiently discriminable at harvest; but the keys of the

* For the particulars respecting the propagation of the several species under consideration, see their respective genera in the ALPHABET OF PLANTS.

~~All~~ lie two, and sometimes three, years in the ground before they vegetate; and it will be convenient to have some distinguishing mark in the stubble, in order to prevent their being disturbed in plowing the intervals after harvest. To this end, if Beans be the fostering crop, scatter a few Oats along the drill among the keys, the stubble of which will show itself plainly among that of the Beans; and, on the contrary, if Oats be the crop, a line of Bean-stubble will have the same beneficial effect.

~~At~~ At harvest the crop should be reaped, not mown, and be carried off with all convenient care. Between harvest and winter, a pair of furrows should be laid back to back, in the middle of each interval, for the purposes of meliorating the soil for the next year's crop, and of laying the seedling plants dry;—whilst the stubble of the unplowed ground on each side of the drills, will keep them warm during winter.

The next year's crop may be Potatoes, Cabbages, Turneps; or, if the first was Corn, this may be Beans; or, if Beans, Wheat drilled in the Tullian manner.

~~All~~ All that the tree-drills will require this year, will be to be kept perfectly clean, by weeding and hand-hoeing.

In the spring of the third year, the drills which rose the first year must be looked over, and the vacancies filled up from the parts where the plants are superfluous: but those of the Ash should be deferred until the fourth year.

The whole should afterwards be looked over from time to time; and this, with cultivating the intervals, and keeping the drills free from weeds, will be all that will be necessary until the tops of the plants begin to interfere.

However, if seedlings be wanted for the purpose of laying into hedges, or if transplanted plants be saleable in the country, the superfluous seedlings may be drawn out of the drills, in the spring of the third or fourth year, and transplanted into some vacant ground.—None can be more proper, nor any so convenient, as the contiguous intervals, in which they may remain two or three years without injury to the drills, and may afford a profitable crop; subject, however, to this disadvantage, the spade must be made use of instead of the plow, in cleaning the interspaces. Nevertheless, a stock of plants of this kind are very valuable, not only as articles of sale, but for clumps, and sheltering plantations.

Further, with respect to the crops.—These may be continued so long as the seedling plants remain within a narrow compass; so that the intervals can be cultivated to advantage, and without injury to the plants.

The crops should, of course, be varied, and the soil ought to receive its proportion, at least, of dung, which would be most properly carried on for the Potatœ-crop.

If the soil be tolerably good, crops thus managed may answer for several years. If the produce pay
but

but the expence of plowing, and other contingent charges, the advantage of stirring and keeping the intervals clean, will be considerable; whilst in an exposed situation the crops will be a means of saving the tree-plants from hares and rabbits.

Whenever the crops are discontinued, the intervals must still be kept stirred; alternately throwing the mould to the roots of the plants, and gathering it into a ridge in the middle of the interval. The most complete manner of doing this, is to split the intervals at the approach of winter, to preserve the roots of the plants from the frost; gather in the spring, to check the weeds, and give a fresh supply of air;—split at Midsummer, to keep the roots from the drought; gather again in autumn, if necessary; and split, as before, against winter. The spring and the Midsummer plowings should be continued so long as a plow can pass between the plants.

The first cutting must be timed by the plants themselves. Whenever the rows of Oaks intended for timbers are in danger of being drawn up too slender for their height, by reason of their being too much crowded by the interference of the rows, the whole must be cut down to within a hand-breadth of the ground; except the Oaks intended for stands, which must now be set out at about two rods distance from each other, and as nearly a quincunx as plants most proper for the purpose will allow.

Strength, cleanness, and upward tendency, are the criterions by which the choice of these ought to be determined upon. If more than one plant of this description stand near the point desired, it is advisable not to take them down the first fall (provided they do not interfere too closely with each other), but to let them remain, in order to guard against accidents, and to afford a future opportunity of making a second choice, when the plants are arrived at a more advanced state.

The young stands will require to be more or less *pruned*: their leaders must be particularly attended to, the lower side-shoots taken off, and their heads reduced in such a manner as to prevent their being rendered top-heavy.

However, if the first fall of underwood be made in due time, their heads in general will want but little pruning; for it is not in this case as in that of transplanting, where the roots have fresh shoots to make, and a fresh source of food to seek: here they are fully prepared to send up the necessary supplies, and the more top there is to promote the ascent, the quicker progress the plants will be enabled to make.

It is therefore very imprudent to defer the first fall until the plants be drawn up too slender to bear a well-sized top: We have known young Oaklings, raised in a manner similar to that which is here described, drawn up so *weedy* by injudicious treatment, as not to be able to bear the smallest top without stooping under the weight of their own leaves;

leaves; a shower of snow, falling without wind, would bow them to the ground.

The pruning being completed, the stubs must be cleared, and the fences repaired, and sedulously attended to. The young timbers must also be attended to from time to time, and the pruning repeated as often as may be found necessary.

The second fall must be timed according to the *wax* which the country calls for; with this proviso, however, that the timber-stands be not injured by being crowded amongst the underwood; for, rather than this should be the case, the second fall should take place, although the Coppice-wood may not have reached the most profitable state.

After the second and every succeeding fall of underwood, the timbers should be gone over, their leaders kept single, and their heads set up, until the stems have arrived at about twenty feet (more or less, as accidents, or their respective tendencies, may happen to determine), when their heads should be permitted to spread, and take their own natural form.

So soon as the branches are firmly established (which may happen in ten, fifteen, or twenty years from the last pruning, sooner or later, according to the soil, situation, and other circumstances) *the heads should be pruned.*

In doing this, the leader must be shortened, to check the upward growth of the tree, and the main strength of the head thrown, as much as may be, into one principal arm, in order to obtain

with greater certainty the important end to which *Wood* timber is more peculiarly applicable :

If the heads can be all trained in one direction, the interspaces will be more equally divided ; and if this direction can be pointed towards the sun, the quality of the timber will, by that means, be considerably improved.

Next, as to raising a Wood against a hang-too steep to be cultivated conveniently with the plow, after the Wood-seeds are sown ; but which may, nevertheless, be fallowed, and brought into proper tilth by the turn-wrest plow ; namely, a plow which turns the furrows all one way, and which is in common use upon the hills of Kent and Surrey ;

Under these circumstances, the planter has it in choice, whether he will sow seeds,—or put in seedlings,—or transplanted plants. If he adopt the first, the expence of cleaning by hand will fall heavy ; and if the last, the labour of the Nursery will not be less burdensome. The middle path is therefore most adviseable.

The seedling plants may, in general, be permitted to remain until the third or fourth year in the seed-bed ; by which time they will have acquired sufficient strength and stature to struggle with the lower order of weeds, whilst those of a more aspiring nature may be kept under, at a reasonable expence.

The arrangement of these plants may either be promiscuous, or in drills similar to those mentioned aforesgoing. After the plants are in, a few acorns
may

Of the two tribes last mentioned, we chiefly recommend

The Larch,	The Poplar,
The Spruce Fir,	The Willow,
The Weymouth Pine *	The Alder.

To this list may be added,

The Chesnut,
The Walnut,
The Cherry,

as substitutes for the Oak and the Beech; and the two latter as humble representatives of the princely Mahogany.

Respecting the *Elm* an error prevails: MILNER and HANBURY tell us (speaking more particularly of the Fine-leaved sort), that it will not flourish in close plantations. Experience, however, leads us to be of a contrary opinion. How often do we see two Elms standing so close together, that a bird could not fly through between them, yet both of them equally well stemmed: indeed, the shoots of the Elm will interweave with each other in a manner we seldom see in any other species of tree. In clumps and close groves too we have seen them thrive abundantly. It is observable, however, that in these situations, their stems running up clean and in a great measure free from side-shoots, the timber takes a different nature from that which is

* There may be other individuals of the *Pinus* tribe, as the Silver and Balm-of-Gilead Firs, &c. which may be equally valuable with the three species here enumerated; but we cannot speak so particularly from our own knowledge concerning them as we can of the Larch, the Spruce, and the Weymouth, whose woods we know to be of a good quality.

GROVES.

THE TIMBER-GROVE is the prevailing *plantation* of modern time. Woods or Coppices are seldom attempted; indeed, until of late years, clumps of Scotch Firs seem to have engaged, in a great measure, the attention of the planter.

The Scotch Fir, however, is one of the last trees that ought to engage the attention of the *English* planter; and should be invariably excluded every soil and situation in which any other timber-tree can be made to flourish. The North aspect of bleak and barren heights is the only situation in which it ought to be tolerated; and even there, the Norway Spruce, and the Larch, will sometimes out-brave it. In better soils and milder situation, the wood of the Scotch Fir is worthless, and its growth so licentious as to over-run every thing which grows in its immediate neighbourhood: this renders it wholly unfit to be associated with other timber-trees: we shall therefore consider it separately at the close of this section.

The species of timber-trees which we beg leave to recommend to the planter's notice have been already mentioned at the opening of this chapter: They consist of

The Oak,	The Beech,
The Ash,	The Pines, and
The Elm,	The Aquatics.

Of

Of the two tribes last mentioned, we chiefly recommend

The Larch,	The Poplar,
The Spruce Fir,	The Willow,
The Weymouth Pine *,	The Alder.

To this list may be added,

The Chestnut,
The Walnut,
The Cherry,

as substitutes for the Oak and the Beech; and the two latter as humble representatives of the princely Mahogany.

Respecting the *Elm* an error prevails: MILLER and HANBURY tell us (speaking more particularly of the Fine-leaved sort), that it will not flourish in close plantations. Experience, however, leads us to be of a contrary opinion. How often do we see two Elms standing so close together that a bird could not fly through between them, yet both of them equally well stemmed: indeed, the shoots of the Elm will interweave with each other in a manner we seldom see in any other species of tree. In clumps and close groves too we have seen them thrive abundantly. It is observable, however, that in these situations, their stems running up clean and in a great measure free from side-shoots, the timber takes a different nature from that which is

* There may be other individuals of the *Pinus* tribe, as the Silver and Balm-of-Gilead Firs, &c. which may be equally valuable with the three species here enumerated; but we cannot speak so particularly from our own knowledge concerning them as we can of the Larch, the Spruce, and the Weymouth, whose woods we know to be of a good quality.

raised in more exposed places ;—where the lateral shoots being numerous, and being lopped off from time to time, the stems become knotty ; by which means the natural tenacity, in which the peculiar excellency of the timber of the Elm entirely consists, is considerably increased.

In a Grove, the *Ash* may be termed an *outside* tree ; plow-beams, shafts, fellies, and harrow-bulls requiring a curvature which generally takes place in the outer-rows of a close plantation. The *Ash*, however, must not be excluded a central situation, as a straightness of grain is frequently desirable.

The *Oak* (except for the purpose of ship-timber, &c.) the *Beech*, the *Chestnut*, and the *Pinus-tribe*, are *inside* trees ; the carpenter, the cooper, and the turner, requiring a cleanness of grain.

With respect to *soil and situation*, the Elm, the Chestnut, the Walnut, and the Cherry, require a good soil and mild situation ; the Aquatics should be confined to moist low grounds ; and the Beech and the Pines to bleak mountainous places ; whilst the Oak and the Ash can accommodate themselves to almost any soil or situation.

We now come to the *method of raising* the several species of Grove-timbers. The Oak, the Ash, the coarse-leaved Elm, the Beech, the Chestnut, the Walnut, and the Cherry, may be raised in drills in the manner described in the preceding section, without any variation, except in the method of training. The Pines being of a hazardous nature when in their infant state, it is advisable to raise them

them in seed-beds, and plant them out as seedling plants. The Fine-leaved Elm must be raised from layers ; and the Aquatics from cuttings *.

The *method of training* Grove-timbers raised in drills, is this : If seedling plants be wanted, the rows may be thinned, the third and fourth years, until the remaining plants stand from twelve to eighteen inches apart. This done, nothing more will be requisite until such time as some kind of *ware* can be cut out ; as edders, hoops, stakes, &c.

The plants having reached this stage of their growth, the rows should be gone over every winter, and all the *underling* plants cut out within the ground (if practicable), which will in general kill the roots and save the expence of grubbing. If the remaining plants are not already too much crowded, the *strugglers* ought to be left, in order to support and assist in drawing up with greater certainty the *conquering* plants.

This conduct should be observed from the time of the first cutting until the trees are set out at distances best suited to their respective natures, and according to the accidental tendency which they happened to take in rising. For, in thinning a timber-grove, little or no regard must be had to a regularity of distance at the root ; an equal distribution of head-room meriting a more particular attention.

* For the method of *planting* a Timber-Grove, see the INTRODUCTION, p. 29.

The selection ought to be directed by the strength of the plants, and the uniformity of the canopy, taken jointly : for a chasm in what may be called the foliage of a grove, is similar to a vacancy in a coppice, or an unproductive patch in a field of corn. The leaves are as labourers ; and every leaf deficient is a labourer lost. The pruner's eye ought therefore to be directed towards the tops, rather than to the roots, of his plants.

There are other things observable in *thinning* a grove. If it be thinned too fast, its upward growth will be checked, and the length of stem curtailed ; and if, on the other hand, the thinning be neglected, or be performed too leisurely, the plants, especially in their taller state, will be rendered too slender and head-less, and thereby become liable to lash each other's tops with every blast of wind. This evil is called *whipping of tops*, and many fine groves, especially of the pine-tribe, have been very materially injured by it. Whenever two trees are seen to be engaged in this sort of conflict, one of them should be taken down without loss of time ; otherwise it will probably prove fatal to them both.

If the thinning be conducted with judgment, little *pruning* will be necessary ; some, however, will be found requisite : strong master plants are liable to throw out side-branches, to the annoyance of their neighbours : those should be taken off in time, and all dead branches should be removed, especially those of the pines ; otherwise
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the heart of the timber will be rendered coarse, knotty, and of a bad quality. The leaders should also have due attention paid to them; particularly if a group of foul-headed plants happen to fall together; for in this case, if nature be not assisted, a timber-tree will in the end be wanted.

This method of training holds good whether the grove be raised from seeds, immediately, or from seedling, or other plants; and whether these be arranged in drills, or in the promiscuous manner; provided the body of the grove be formed of one entire species of timber-tree; for of the method of raising that species of grove we have hitherto been treating.

With regard to *miscellaneous groves*, we have seen so many evil effects arising from injudicious mixtures of timber-trees, that we are inclined to condemn, as *unprofitable*, all mixtures whatever. It may be argued, however, that by associating trees of different natures, the soil will be made the most of; under an idea that each species of plant has its own favourite food: and, indeed, it is well known that corn flourishes after grass, and grass after corn; that the Ash will thrive after the Oak, and the Oak after the Ash, in a more profitable manner than any one of these plants would do if propagated repeatedly upon the same spot of soil.

This leads to an improvement in the method of raising a Grove of Oaks; and the same method is applicable to any other species of tree. Instead of sowing every drill with acorns, let every second be sown with the seeds of a tree of a different nature; and, under ordinary circumstances, with
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those of the Ash: its seeds are easily procured, and as underwood, no tree is applicable to so many useful purposes.

In this case, the method of training is nearly the same as that already described; except that, throughout, the Ash must be made subservient to the Oak: if it rise too fast, it must be cut down to the stub as underwood: if ashens stands be left to draw up the young Oaks, they must be lopped, or taken down the moment they aspire to a superiority, or give the neighbouring plants an improper tendency.

When the Oaks have acquired a sufficient length of stem, and have made good their canopy, the assistance of the Ashes will be no longer wanted, nor will they be any longer valuable as underwood; they ought therefore to be entirely removed, and their stubs grubbed up: and thus, the Oaks will receive at once a fresh supply of air and pasturage.

In bleak situations, a quicker-growing and better-feathered plant than the Ash, affords more valuable protection: the Scotch Fir, kept under due subjection, is eligible in this case. The Furze is sometimes made use of for this purpose: but the plant which we wish to recommend in preference to either of these is the Broom; as being less mischievous, and at the same time equally efficacious. Its seeds are readily procured; its growth is rapid; it will brave the bleakest aspect; and the natural softness of its foliage renders it pleasant to work amongst, even in its tallest and most crowded state.

His

His Grace the DUKE of PORTLAND,---whose plantations, *alone*, are sufficient to immortalize his character, and hand down to succeeding generations his Grace's public and private virtues,---finds, that upon the bleak sandy swells of Nottingham Forest, the Birch affords the most friendly protection to the Oak : and, when we consider the easy manner in which this plant may be raised, the quickness of its growth, the shelter it gives, and its value in many places as an underwood, we must allow great merit in the choice.

His Grace's plantations being carried on upon a scale which is truly magnificent, and it being in the conducting of great undertakings that the human invention is raised to the highest pitch, it would be unpardonable, in a work of this nature, to omit inserting the following Letter from Mr. SPEECHLY, his Grace's Gardener, to Dr. HUNTER, Editor of a late edition of EVELYN's *Sylva*, describing the manner in which his Grace's plantations are conducted.

We introduce it in this place, as the style of planting it describes is peculiarly adapted to raising GROVES against HANGS, or acclivities of hills. The candour contained in the Letter itself precludes the necessity of apprizing our readers, that it is not calculated for a STRONG LEVEL COUNTRY, nor for raising WOODS in any soil or situation.

———“ Few Noblemen plant more than his Grace the Duke of Portland ; and I think I may say, without vanity, none with greater success. But as no man should think of planting in the very extensive manner that we do, before he is provided with well-stocked nurseries, it may not be amiss, before I proceed further, to give a short sketch of that necessary business, as also to inform you of the soil and situation of our seat of planting. The greatest part of our plantation is on that soil which in Nottinghamshire is generally distinguished by the name of Forest-land. It is a continuation of hills and dales ; in some places the hills are very steep and high ; but in general the ascents are gentle and easy.

“ The soil is composed of a mixture of sand and gravel ; the hills abound most with the latter, and the vallies with the former, as the smaller particles are by the wind and rains brought, from time to time, from the high grounds to the lower. It is on the hilly grounds we make our plantations, which in time will make the vallies of much greater value, on account of the shelter they will afford.

“ After his Grace has fixed on such a part of this Forest-land as he intends to have planted, some well-situated valley is chosen (as near the center of the intended plantations as may be) for the purpose of a nursery ; if this valley is surrounded with hills on all sides but the south, so much the better. After having allotted a piece of ground, consisting of as many acres as is convenient for the purpose, it is fenced about in such a manner as to keep out all obnoxious animals. At either end of the nursery are large boarded gates, as also a walk down the middle, wide enough to admit carriages to go through, which we find exceedingly convenient when we remove the young trees from thence to the plantations. After the fence is completed, the whole is trenched (except the walk in the middle) about twenty inches deep, which work may be done for about three pounds ten shillings, or four pounds, per acre, according as the land is more or less gravelly ; this work is best done in the spring when the planting season is over. If, after the trenching, two or three chaldrons of lime be laid on an acre, the land will produce an excellent crop either of cabbages or turnips, which being eaten off by sheep in the autumn, will make the land in fine order for all sorts of tree-seeds : but as the Oak is the sort of tree we cultivate in general, I shall confine myself particularly to our present method of raising and managing that most valuable species. In the autumn, after the cabbage or turnips are eaten off, the ground will require nothing more than a common digging. So soon as the acorns fall, after being provided with a good quantity, we sow them in the following manner : Draw
drills

drills with a hoe in the same manner as is practised for pease, and sow the acorns therein so thick as nearly to touch each other, and leave the space of one foot between row and row, and between every fifth row leave the space of two feet for the alleys. While the acorns are in the ground great care must be taken to keep them from vermin, which would very often make great havock amongst the beds, if not timely prevented. Let this caution serve for most other sorts of tree-seeds.

“ After the acorns are come up, the beds will require only to be kept clean from weeds till they want thinning ; and as the plants frequently grow more in one wet season, where the soil is tolerably good, than in two dry ones, where the soil is but indifferent, the time for doing this is best ascertained by observing when the tops of the rows meet. Our rule is to thin them then, which we do by taking away one row on each side the middlemost, which leaves the remaining three rows the same distance apart as the breadth of the alleys. In taking up these rows we ought to be anxiously careful neither to injure the roots of the plants removed, nor of those left on each side. The rest of the young Oaks being now left in rows at two feet apart, we let them again stand till their tops meet ; then take up every other row, and leave the rest in rows four feet asunder, till they arrive to the height of about five feet, which is full as large a size as we ever wish to plant. In taking up the two last sizes, our method is to dig a trench at the end of each row full two feet deep, then undermine the plants, and let them fall into the trench with their roots entire.

“ And here let me observe, that much, very much, of their future success depends on this point of their being well taken up. I declare that I should form greater hopes from one hundred plants well taken up and planted, than from ten times that number taken up and planted in a random manner ; besides, the loss of the plants makes the worst method the most expensive.

“ But before I leave this account of our method of raising Oaks, I shall just beg leave to observe, that we are not very particular in the choice of acorns ; in my own opinion, it matters not from what tree the acorns are gathered, provided they are good ; for although there seems to be a variety of the English Oak, in respect to the form of the leaf and fruit, also their coming into leaf at different seasons, with some other marks of distinction, yet I am of opinion that they will all make good timber-trees if properly managed. It is natural to suppose that a tree will grow low and spreading in a hedge-row ; on the contrary, it is very improbable that many should grow so in a

thick wood, where, in general, they draw one another up straight and tall. And I have observed that the same distinctions hold good amongst our large timber-trees in the woods, as in the low-spreading Oaks in the hedge-rows.

“ Though I have not as yet taken notice of any other sort of tree but the Oak, yet we have a great regard for, and raise great quantities of, Beech, Larch, Spanish Chestnut, Weymouth Pine, and all sorts of Firs, the Scotch excepted, as well as many other kinds, by way of thickening the plantations while young; among which the Birch has hitherto been in the greatest estimation, it being a quick-growing tree, and taking the lead of most other sorts on our poor forest hills; and as we have an inexhaustible spring of them in the woods, where they rise of themselves in abundance from seed, we at all times plant them plentifully of different sizes. As to the Elm and Ash, we plant but few of them on the Forest, though we raise great quantities of both, but particularly the Ash, which being an useful wood (but a bad neighbour amongst the Oaks) we plant in places apart by itself. I shall dismiss this subject concerning the management of our nurseries, after saying a word or two relating to pruning: we go over the whole of the young trees in the nursery every winter; but in this we do little more than shorten the strong side-shoots, and take off one of all such as have double leads.

“ Having thus pointed out the mode of forming and managing our nurseries, I shall now proceed to the plantations. The size of the plantations, at first beginning, must be in proportion to the stock of young trees in the nursery; for to undertake to plant more ground than we have young trees to go through with for thick plantations, would turn to poor account on our forest hills. We always plant thick, as well as sow plentifully at the same time, provided it be a season in which acorns can be had; so that all our plantations answer in a few years as nurseries to succeeding plantations.

“ As to the form of the plantations, they are very irregular; we sometimes follow a chain of hills to a very great distance; so that what we plant in one season, which perhaps is sixty, eighty, and sometimes an hundred acres, is no more than a part of one great design.

“ If the ground intended to be planted has not already been got into order for that purpose, it should be fenced about at least a twelvemonth before it is wanted to plant on, and immediately got into order for a crop of turnips; two chaldrons of lime being laid on an acre will be of great service, as it will not only be a means of procuring a better crop of turnips, but will bind
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the land afterwards, and make it fall heavy, which is of great use when it comes to be planted, as some of the forest land is so exceedingly light as to be liable to be blown from the roots of the young trees after planting: therefore we find it to be in the best order for planting about two years after it has been plowed up from pasture, before the turf is too far gone to a state of decay. It will be necessary to have a part of the turnips eaten off soon in the autumn, in order to get the ground into readiness for early planting; for we find the forward planting generally succeeds the best.

“ After the turnips are eaten off, we plow the ground with a double-furrow trenching plow made for that purpose, which, drawn by six horses, turns up the ground completely to the depth of twelve or thirteen inches: this deep plowing is of great service to the plants at the first, and also saves a great deal of trouble in making the holes. After the plowing is finished, we divide the ground into quarters for the planting by ridings. It will be a difficult matter to describe the laying out the ground for this purpose, especially where there is such a variety of land as we have on the Forest; much depends on the taste of the person employed in this office. Between the hills, towards the outsidcs of the plantations, we frequently leave the ridings from sixty to an hundred yards in breadth, and contract them towards the middle of the woods, to the breadth of ten or twelve yards; and on the tops of the hills where there are plains, we frequently leave lawns of an acre or two, which makes a pleasing variety.

“ In some of them we plant the Cedar of Libanus at good distances, so as to form irregular groves; and this sort of tree seems to thrive to admiration on the forest-land. On the outsidcs of the woods, next to the ridings, we plant Evergreens, as Hollies, Laurels, Yews, Junipers, &c. and these we dispose of in patches, sometimes the several sorts entire, at other times we intermix them for variety; but not so as to make a regular screen or edging. Our design in the distribution of these plants, is to make the outsidcs of the woods appear as if scalloped with Evergreens intermixed sometimes with rare trees, as the *Liriodendron Tulipifera*, or Virginian Tulip-tree, &c.

“ After the ground is laid out into quarters for planting, we assign certain parts to Beech, Larch, Spanish Chestnuts &c. These we plant in irregular patches here and there, throughout the plantations, which, when the trees are in leaf, has the most pleasing effect, on account of the diversity of shades; especially in such parts of the Forest where four, five, and sometimes more of the large hill-points meet in the same valley, and tend, as it were, to the same center.

“ After those patches are planted, or marked out for that purpose, we then proceed to the planting in general. We always begin with planting the largest young trees of every sort, and end our work with those of the smallest size : were we to proceed otherwise, the making a hole for a larger-sized tree, after the small ones are thick planted, would cause the greatest confusion.

“ Birch is generally the sort of tree we make our beginning with, which we find will bear to be removed with great safety, at the height of six or seven feet, though we commonly plant rather under than at that size. This sort of tree we are always supplied with from our plantations of five or six years growth. But before I proceed to the taking them up, it will be proper to inform you, that in the planting season we divide our hands into four classes, which we term Takers-up, Pruners, Carriers, and Planters : and here I shall describe the several methods of doing this work.

“ First, in taking up we have the same care to take up with good roots in the plantations, as was recommended in the nursery, though we cannot pursue the same method ; but in both places, so soon as the plants are taken up we bed them in the ground in the following manner : Dig a trench at least fifteen inches deep, and set the young trees therein with their tops aslant, covering the roots well as we go along, and almost half way up the stem of the plants, with the earth that comes out of a second trench, which we fill in the like manner, and so proceed on till we have a load more or less in a heap, as may be convenient to the place from whence they were taken. In our light soil this trouble is but little, and we always have our plants secure, both from their roots drying, and their suffering by frost. We have a low-wheeled waggon to carry them from the heaps, where they are bedded, to the pruners, and generally take two loads every other day. When they arrive, the planters, pruners, &c. all assist to bed them there, in the same manner as before described. We have a portable shed for the pruners to work under, which is also convenient for the rest of the work-people to take shelter under in stormy weather. From the above heaps the plants are taken only so fast as they are wanted for pruning, which work we thus perform : Cut off all the branches close to the stem to about half the height of the plant, shortening the rest of the top to a conical form in proportion to the size of the plant ; and in pruning of the roots, we only cut off the extreme parts that have been bruised by the taking up, or such as have been damaged by accident, wishing at all times to plant with as much root as can be had.

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" As soon as they are pruned they are taken to the planters, by the carriers, who are generally a set of boys, with some of the worst of the labourers. The planters go in pairs; one makes the holes, and the other sets and treads the plants fast, which work they commonly do by turns. In making of the holes we always take care to throw out all the bad soil that comes from the bottom: if the planting be on the side of a hill, we lay the bad soil on the lower side of the hole, so as to form a kind of basin; for without this care our plants would lose the advantage of such rains as fall hastily. We at all times make the holes sufficiently large, which is done with great ease after our deep plowing.

" Before we set the plant, we throw a few spadefuls of the top soil into the hole, setting the plant thereon with its top rather inclining to the west; then fill up the hole with the best top soil, taking care that it closes well with the roots, leaving no part hollow. When the hole is well filled up, one of the planters treads and fastens the tree firmly with his feet, while his partner proceeds to make the next hole.

" The fastening a tree well is a material article in planting; for if it once becomes loose, the continual motion which the wind occasions, is sure to destroy the fibres as fast as they are produced, which must end in the destruction of the plant, if not prevented. It is to guard against this inconveniency that we take off so much of the top, as has been described in the article of pruning.

" We plant about three or four hundred Birches of the large size on an acre, and nearly the same number of the first-sized Oaks; we also plant here and there a Beech, Larch, Spanish Chestnut, &c. exclusive of the patches of the said sorts of trees before planted. We then proceed to plant plentifully of the second and lesser-sized Oaks; and last of all a great number of the small Birches, which are procured from the woods at about three shillings or three shillings and sixpence per thousand: these we remove to the succeeding plantations after the term of five or six years. Of the several sizes of the different kinds of trees, we generally plant upwards of two thousand plants upon an acre of land, all in an irregular manner.

" After the planting is finished we then sow the acorns (provided it be a season that they can be had) all over the plantation, except amongst the Beech, Larch, &c. in the aforesaid patches. Great care should be taken to preserve the acorns intended for this purpose, as they are very subject to sprout, especially soon after gathering; the best method is to lay them thin in a dry airy place, and give them frequent turnings. We sow these

acorns in short drills of about a foot in length, which work is done very readily by two men, one with the acorns, the other with a hoe for the purpose of making the drills and covering the seed.

" We are of opinion that the plants produced from these acorns will at last make the best trees ; however, I will not pretend to say how that may be, as the Oaks, transplanted small, grow equally well for a number of years : but it is probable that a tree with its tap-root undisturbed may, in the end, grow to a much larger size.

" After the whole is finished to a convenient distance round the pruners, we then remove their shed to a second station, and there proceed in the like manner ; and so on till the whole be finished.

" It would be well to get the planting done by the end of February, especially for trees of the deciduous kind ; but from the disappointments we meet with, occasioned by the weather, we are sometimes detained to a later season.

" I have several times made trial of twelve or fourteen kinds of American Oaks sent over to his Grace in great quantities. I sowed them in the nursery, and also in the best and most sheltered parts of the plantations. In both places they come up very plentifully ; but I now find that several of the sorts will not stand the severity of our winters, and those that do make so small a progress as to promise no other encouragement than to be kept as curiosities.

" Towards the end of April, when the ground is moist, it will be a great service to go over the whole plantations, and fasten all such trees as are become loose since their planting ; after this, nothing more will be required till the month of June, when we again go over the whole with hoes, cutting off only the tall-growing weeds ; for the sooner the ground gets covered with grass, in our light soil, so much the better.

" I own there is something slovenly in the appearance of this method, and on some lands I would recommend keeping the ground clean hoed for some time at first, as also planting in rows, which in that case would be necessary. More than once I have tried this method on our forest-hills, and always found, after every hoeing, that the soil was taken away by the succeeding winds into the valleys.

" Besides this inconvenience, the reflection of our sandy soil is so very great, that we find the plants stand a dry season much better in our present method, than in the former : and whoever fancies that grass will choke and destroy seedling Oaks, will, after a few years trial, find himself agreeably mistaken : I have
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even recommended the sowing the poorer parts of the hills with furze or whin-feed, as soon as they are planted : we have sometimes permitted the furze to grow in the plantations by way of shelter for the game, which though it seems to choak and overgrow the Oaks for some time, yet after a few years we commonly find the best plants in the strongest beds of whins. This shews how acceptable shelter is to the Oak whilst young ; and experience shews us that the Oak would make but a slow progress on the forest-hills for a number of years at the first, were it not for some kind nurseries ; and the Birch seems to answer that purpose the best, as I have already observed.

“ The several sorts of Fir-trees, from appearance, seem to promise a greater shelter ; but on the forest-land they do not grow so fast as the former, and what is worse, the Oak will not thrive under them, as they do immediately under the Birch.

“ Where a plantation is on a plain, a screen of Firs for its boundary is of singular use, but the situation of the forest-land denies us this advantage.

“ We continue to cut down the tall-growing weeds two or three times the first summer, and perhaps once the next, or second season after planting ; which is all that we do in respect to cleaning. The next winter after planting, we fill up the places with fresh plants where they have miscarried ; after which there is little to be done till about the fourth or fifth year ; by which time the small-sized Birch, and seedling Oaks, will be grown to a proper size for transplanting : in the thinning of these due care must be had not to take too many away in one season, but, being properly managed, there will be a supply of plants for at least half a dozen years to come.

“ About the same time that the lesser-sized Birch wants thinning, the large ones will require to have their lower branches taken off, so as to keep them from injuring the Oaks ; and this is the first profit of our plantations, the Birch-wood being readily bought up by the Broom-makers. This pruning we continue as often as required, till the Birches are grown to a sufficient size to make rails for fencing ; we then cut them down to make room for their betters.

“ By this time the Oaks will be grown to the height of twelve or fourteen feet, when they draw themselves up exceedingly fast : each plant seems as it were in a state of strife with its neighbour, and in a strict sense they are so, and on no other terms than life for life ; and he whose fate it is to be once overtopped, is soon after compelled to give up the contest for ever.

“ After the Birches are cut down there is nothing more to be done but thinning the Oaks, from time to time, as may be required,

quired, and cutting off their dead branches as frequently as may be necessary. We are very cautious in doing the former, knowing well that if we can but once obtain length of timber, time will bring it into thickness; therefore we let them grow very close together for the first fifty years.

“ And here it may not be improper to observe the progress the Oak makes with us, by describing them in two of our plantations, one of twenty-eight, the other of fifty years growth. In the former they are in general about twenty-five or twenty-six feet in height, and in girth about eighteen inches: the trees in the latter, planted in 1725, are something more than sixty feet in height, and in girth a little above three feet; and these trees are in general about fifty feet in the bole, from which you will easily conceive the smallness of their tops, even at this age.

“ It would be a difficult matter to describe their farther progress with any degree of certainty, therefore let it suffice to make this last observation on them in their mature state.”

Welbeck, 16 June, 1775.

We shall close this section with the *Scotch Fir*.— It has already been observed, that the northern aspect of bleak and barren hills is the only situation in which it can be propagated with any propriety in this country. The North of England abounds with situations bearing this description; and so long as they remain in a state of nakedness and waste, whilst there is *any* tree with which they may be profitably covered, they lie, a reproach to their owners, and as blots on the face of the country.

The late Sir CHARLES TURNER has made an attempt upon the heaths of Yorkshire, but without any great share of success. His method was to *dibble* in seedling-trees, Larches, Oaks, and even Acorns, among the long heath, without any previous preparations. Some few of the Scotch Firs have got their heads above the Ling, and are now (1783) doing well; especially under walls and in other sheltered situations.

The

The Larches and the Oaks have shared a worse fate. The Spruce Fir has not been tried until within the last two years; the plants remain healthy, and promise success.

Sir CHARLES's want of success may not be owing to an improper method, more than to the want of a proper person to overlook his plantations: the person who has the care of plantations should reside upon the spot.

Scotland is the country to which we must apply for information respecting the propagation of the Fir. It is there where it is cultivated to advantage. In the notes to HUNTER's EVELYN's *Sylva* we find a letter, written by JAMES FARQUHARSON, Esq. addressed to the Editor of that compilation, describing the treatment of this tree in Scotland.

Marlee, June 22, 1775.

" ————— In order to raise plantations of the Scotch Fir, let the cones be gathered in the month of February or March, from thriving young trees, as the old ones are not easily accessible, nor so productive of seed. These are to be exposed to the heat of the sun, thinly spread on any kind of coarse canvas, taking them under cover in the night-time, and only exposing them when the sun shines. This soon makes the cones expand with a crackling noise. When any quantity of the seed is shed, it must be separated from the cones by a search, otherwise the first-dropped seeds would become too dry before the cones yielded their whole quantity, which often takes up a considerable time; so that we are sometimes obliged to dry the cones in kilns, to make them give their contents in time for sowing, which ought to be done the end of April or beginning of May. The first method of procuring the seed is certainly the most eligible, tho' the other answers very well when attentively performed, so as not to damage the seed by too much heat. A light loamy soil, trenched a foot and a half deep, and laid out in beds five feet broad, answers the best for sowing. Let the seeds be sown very thick, and covered with a thick
lifting

lifting of mould from the alleys. Plants raised in this manner will rise like a brush. No kind of manure should be given to the beds, as productive of weeds; the drawing of which not only brings up many of the tender plants, but loosens the ground, and makes blanks that let in frosts in winter and drought in summer. To give an idea of the sowing; I never consider my crop of plants good, unless I have above a thousand in each foot long of the beds, that is, in five square feet. Upon their having two seasons growth, I plant them out irregularly from the seed-bed, about three feet asunder, upon the mountainous grounds where they are to rise to perfection. I begin to plant the driest ground in autumn, eighteen months after sowing, and persist in this operation until the frost prevents me. I begin again in February. or rather as the weather admits, and continue this work sometimes to the end of April, so as to plant out the product of the two-year-old seed-beds. I put the plants into the ground with two cuts of a spade thus >. I raise the point of the angle with what we call a Dibble, and laying the plant up to the neck, stamp down the raised sod with the foot. In this method two men may plant a thousand in a day. When the ground is rocky, or very stony, I use a Dibble shod with iron, having a cleft at the extremity to lead down the root, putting the plants into the ground in the manner that cabbages are planted. One man will plant as many in this way as two in the other; yet the first method is preferable where the ground admits of it, as I have always observed fewer plants to fail. My reason for planting from the seed-bed is, that it comes nearest to the operation of Nature. Plants removed from the seed-bed into the nursery, must have their roots pruned considerably before they can be planted into the pits where they are to continue, which adds greatly to the expence. Besides, *nursing* this hardy mountainous tree causes a luxuriant growth, which spoils its nature and robs it of longevity.

“ It is generally believed that there are two kinds of Fir-trees, the produce of Scotland, viz. the red or resinous large trees, of a fine grain, and hard solid wood; the other, a white-wooded Fir, with a much smaller proportion of resin in it, of a coarser grain, and a soft spongy nature, never comes to such a size, and much more liable to decay. At first appearance this would readily denote two distinct species, but I am convinced that all the trees in Scotland under the denomination of Scotch Fir, are the same; and that the difference of the quality of the wood, and size of the trees, is entirely owing to circumstances, such as the climate, situation, and soil they grow in. The finest Fir-trees appear in the most mountainous parts of the

the Highlands of Scotland, in glens or on sides of hills generally lying to a northerly aspect, and the soil of a hard gravelly consistence, being the natural produce of these places; the winged seeds are scattered in quantities by the wind, from the cones of the adjacent trees, which expand in April and May with the heat of the sun. These seedlings, when young, rise extremely close together, which makes them grow straight, and free from side-branches of any size, to the height of fifty or sixty feet before they acquire the diameter of a foot: even in this progress to height they are very slow, occasioned by the poorness of the soil, and the numbers on a small surface, which I may say makes them in a constant state of war for their scanty nourishment, the stronger and tallest by degrees over-topping the weaker, and when the winds blow they lash against one another: this assists in beating off any horizontal branches that might damage the timber with knots, as well as by degrees crushes the over-topped trees. In such state of hostility they continue struggling until the master-trees acquire some space around them; then they begin to shoot out in a more bushy manner at the top, gradually losing their spiral form, increasing afterwards more in size of body than height, some acquiring four feet diameter, and about sixty feet of height to the branches, fit for the finest deal board. The growth is still extremely slow, as is plainly proved by the smallness of the grain of the wood, which appears distinctly in circles from the center to the bark. Upon cutting a tree over close at the root, I can venture to point out the exact age, which, in these old Firs, comes to an amazing number of years. I lately pitched upon a tree of two feet and a half diameter, which is near the size of a planted Fir of fifty years of age, and I counted exactly two hundred and fourteen circles or coats, which makes this natural Fir above four times the age of the planted one. Now, as to planted Firs, these are raised first in dressed ground from the seed, where they stand two seasons or more, then are planted out in the ground they are to continue in at regular distances, have a clear circumference round them for extending both roots and branches; the one gives too quick nourishment to the tree, which shoots out in luxuriant growth, and the other allows many of the branches to spread horizontally, spoiling the timber with knots; besides, this quick growth occasions these quick yearly circular coats of wood, which form a coarse grain of a spongy soft nature. The juices never after ripen into a proportional quantity their resinous preservative balm; so that the plantations decay before the wood acquires age, or a valuable size; and the timber, when used in work, has neither strength, beauty, nor duration.

sation. I believe the climate has likewise a great share in forming the nature of the best wood, which I account for in the following manner: The most mountainous parts of the Highlands, particularly the northerly hanging situations, where these fine Fir-trees are, have a much shorter time of vegetation than a more southerly exposure, or the lower open countries, being shaded by high hills from the rays of the sun, even at mid-day, for months together; so that, with regard to other vegetables, nature visibly continues longer in a torpid state there than in any other places of the same latitude. This dead state of nature for so long a time yearly, appears to me necessary to form the strength and health of this particular species of timber. No doubt they may at first shew a gratefulness for better soil and more sun, by shooting out spontaneously; but if the plant or tree is so altered by this luxury that it cannot attain any degree of perfection fit for the purposes intended, the attempt certainly proves in vain.

" From what is said above, it is not at all my intention to dissuade from *planting* Scotch Fir, but to encourage those that have the proper soil and situation to do so; being of opinion that where these circumstances agree, and there, planting not in lines, but irregularly and thicker than common, the trees will come to be of equal size and value with the *natural* ones. In confidence of this, I have planted several millions on the sides of hills, out of the reach of feed from the natural Firs:

" As to the Larch, it grows in this country in great abundance, from the seed of our own plantations. I have found this beautiful and hardy tree to answer extremely well when planted out on barren grounds, from six inches to six feet high; and they are seldom known to fail, except where water has reached their roots. I have often remarked, with surprise, that when cattle or deer have broken off the main shoots with their horns, another branch has taken the lead, and stretched away at such a rate as to heal up the wound so completely, that in a few years it was with difficulty I could discover the traces of the injury. The amazing growth of the *Larix* far exceeds with me all the native as well as foreign trees, bearing the exposure and inclemency of the season better than any of them; and of late I have the pleasure to find that they naturalize themselves by sowing. I with my experience could assist me in speaking with as much certainty with regard to the value and usefulness of the timber; but in that I can give but little satisfaction, as my oldest trees are not thirty years from the seed. At Dunkeld I have seen a small summer house finished with *Larix* wood; the plants came from London in earthen pots, about the year

1740, rather as a curiosity than from any expectation of their excellency. Though full of circular knots, the wood looked well, and did not seem to gall or warp so much as Fir of the same age and seasoning would have done. It will be necessary to remark, that the heart or center of large trees is generally the knottiest part of the trunk, occasioned by the collateral branches, when young, supporting the stem to stature, which, as the tree advances, die and fall off; and this is particularly evident in trees that grow in thickets. The surface soon heals over, and the body of the tree is annually increased by circular rings of wood. I shall suppose a tree to be a foot in diameter when the lower branches die and drop off. In course of time it acquires four feet in diameter, which gives a surrounding coat, one foot and a half in thickness, of clean timber, the center remaining knotty. The growth of the Larix, and manner of dropping its branches when close together, very much resembles the Fir; so I am confident this fault of knottiness, which seems to be the principal one, will amend by age. Yours, &c."

C O P P I C E S.

AFTER what has been said in the section Woods, little remains to be added here concerning the method of raising COPPICES, excepting so far as relates to bogs, and other rotten, swampy situations.

The species of woods proper for this occasion are,

The Ash,	The Alder,
The Poplar,	The Ozier.

The *Ash* will thrive to great advantage in moist situations, provided the roots have room enough to keep free from immediate contact with water.

The *Poplar* is seldom planted as a Coppice-wood ;
for

for what reason we know not : it will endure a great deal of moisture.

The wood which we most commonly find propagated in situations similar to those described above, is the *Alder* ; a tree which seems to set water at defiance, provided there be mould or mud enough to sheath its roots in. Its poles, however, are not equal to those of the *Ash*, nor is its fuel to be compared with it, though preferable to that of the *Poplar*.

But of all the Aquatics, the *Ozier* stands first as a Coppice-wood, whether it be cut annually for the use of the basket-makers, or be suffered to stand three, four, five, or a greater number of years, for the purpose of withs, hurdles, edders, stakes, rake-handles, other implements of husbandry, or poles of almost any length or dimensions.

The preparation of the soil consists in digging trenches, at distances proportioned to the situation, so as to lay the surface dry ; and the lower the water can be drawn beneath it, the fairer prospect there will be of success.

This work must be done in autumn, when the soil, having had all the summer to grow firm in, will stand to the spade ; and the sides of the trenches will be less liable to give way than they would in the spring, when the soil is filled like a sponge with water ; which ouzing out from beneath the beds into the new-made trenches, their sides become undermined, and can never afterwards be
made

made to stand properly ; whereas, on the contrary, if the trenches be opened in autumn, and the mould which comes out of them be used in filling up the hollows, and laying the surface even and round, the winter's rains will not pass through the soil, but will run off the surface, and will rather assist in establishing the beds than in rendering them tender.

In March, the beds being firmly established, and their surfaces in good working order, the soil should be thoroughly trenched with the spade, and the setts inserted.

The Ash will require rooted plants, but the Aquatics will grow from cuttings or from layers.

The setts should be put in about two feet from each other, and a potatoe-plant dibbled into the center of each interspace. During summer the surface should be kept clean hoed, and the potatoes earthed up from time to time.

In autumn, after the potatoes are taken up, the soil ought to be drawn towards the roots of the plants, leaving channels between them to carry off the winter's rains. The ensuing spring the plants must be looked over, and such as have failed should be replaced with fresh strong setts.

After this, little more will be necessary than keeping under the taller weeds : if, however, in the course of three or four years the plants do not gain entire possession of the soil, by overcoming the weeds and grassiness, they must be cut down to the stub, the interspaces dug, the rubbish of the

surface turned in, and the roots of the plants freed from incumbrances with the hoe : A second crop of potatoes may be taken, and the former treatment repeated.

Thus far as to the *Coppice* : we will conclude this section with some observations on the *Ozier-bed*.

Notwithstanding the *Ozier* is usually planted near water, we have good reason to believe it affects a dry situation : this we know, that it will not flourish in water ; that is, when water has a *constant* communication with its roots. The places it most delights in are drained moors and the banks of large rivers, both of which are peculiarly dry situations : it has no dislike, however, to being flooded occasionally, but seems rather to be invigorated by such irrigation : therefore, the sand-banks which we frequently see thrown up by the sides of rivers, and which sometimes lie for half a century before they become profitable, are peculiarly eligible to be converted into *Ozier-grounds*.

The method of planting an *Ozier-ground* is this : The soil being laid perfectly dry, and its surface made thoroughly clean, cuttings, of the second or third year's growth, and about twelve inches long, are planted in drills, about two feet and a half asunder, in the month of March. The cuttings ought to be thrust seven or eight inches deep, leaving four or five inches of head above ground.

The intervals must be kept stirred with a small plow ; or, the first year a crop of potatoes may be taken ; the drills in either case must be kept perfectly clean with the hand-hoe ; and at the approach
of

of winter the intervals must be split, and the mould thrown to the roots of the young plants, in order to lay them dry and warm during winter.

In spring it will be well to trim off the first year's shoots (though not necessary), and replace the plants which have failed with fresh cuttings.

The second summer the intervals must be kept stirred, the drills hoed, and the plants earthed up, as before, against winter.

The ensuing spring the stools must again be cleared; although the twigs as yet will be of little value. But the third cutting they will produce marketable ware, and will increase in quantity and value until the profits arising from them will be almost incredible. In situations which the Ozier affects, and in countries where the twigs are in demand, Ozier-grounds have been known to pay an annual rent of ten pounds an acre! Under ordinary circumstances, they will, if properly managed, pay four or five.

In Yorkshire the wands are sold by the bundle; but in Gloucestershire, where Ozier-grounds abound upon the banks of the Severn, the grounds are let under lease to the basket-makers, who keep up the fences, and take upon themselves the entire management, during the term of the lease.

WOODY WASTES.

NO inconsiderable part of the face of this country, taken collectively, is disfigured by lands bearing this description* ; the remedy, however, is easy, and the disgrace might soon be removed.

If the soil and situation be favourable to grass or arable produce, grub up the bushes, and clear away the rubbish ; but, on the contrary, if the land, either from its own nature or from the proportion of woodiness which has already got possession of its surface, can be more profitably converted into Woodland, fill up the vacant patches in the following manner.

The first business is to fence it round, and the next to cut down the underwood to the stub, and set up the timbers. If the vacancies be small, they ought to be trenched with the spade ; if large, they may be fallowed with the plow ; or, in either case, the plants may be put in without any other preparation than digging holes to receive them : however, with *this* kind of management success can only be *hoped for*, whilst under *that* it may be *secured*.

The species of wood and the mode of propagation depend upon locality and the species of plantation required. If underwood be an object, the smaller chafms may be filled up by layering ;

* See the introductory part of this Chapter.

for which purpose young shoots ought to be left; when the brush-wood is felled, for layers: if timber alone be the desired object, seedling plants may be put in, and acorns or other seeds dibbled in the interspaces: Whether the Wood, the Grove, or the Coppice, be intended, the large spaces ought to be filled up in that way; or seeds only may be sown in drills, and treated as before directed; or they may be scattered in the random manner, and the seedlings kept clean by weeding and hand-hoeing; or the fostering care may be left to nature alone: indeed, in *this* kind of way Wood and Timber Groves may be propagated.

We do not, however, mean to recommend to our readers practices dependent upon *chance*, after having been solicitous to point out those which may be pursued with *certainty*.

Gentlemen, when they set about forming plantations or raising Woodlands, ought to consider, that the labour, the fencing, the seeds or plants, the rent, and other contingent charges of the land, their own present credit, and their future fame, are *staked*. If after waiting eight or ten years a miscarriage take place, the whole is *lost*. On the contrary, if, by judicious methods and careful management, no material failure happen, the prize is *won*; not only the principal but interest is secured: and this by a small additional expence; the trifling difference in labour bestowed upon the after-management only: for the labour in the first

instance, rent, &c. &c. &c. are in both cases similar.

Much depends upon the person to whose care plantations are entrusted. If a Gentleman has not leisure nor inclination to attend to them himself, he ought to appoint a man of experience; and, if possible, one who is *settled* near the seat of planting; and who is likely to enjoy his appointment for some length of time. For he who plants ought to expect to nurse; and having planted he ought to nurse, because his own credit is at stake. On the contrary, a Gentleman who is continually changing his planter, must never expect to see his plantations succeed; for the credit of the present rises upon the miscarriage of his predecessor: he has even an interest in neglecting to nurse; because his own planting will be thereby set off to advantage. On the other hand, being without hopes of seeing his own labours succeed, he loses a necessary stimulus: indeed, he is no way interested; for he is sure of an *excuse* in the neglect of his successor. This is not a theoretical idea; but is drawn from actual observation.

C O N C L U S I O N.

BEFORE we close our discourse upon WOODLANDS, it may be proper to say a few words respecting the *sale* and *felling* of timber and underwood.

In

In the southern counties timber is usually sold by the ton of 40 feet, either naked, that is already fallen and divested of its top, or standing; the buyer taking it down, and having the advantage of the top-wood, bark, &c. the *timber* (namely, every part exceeding six inches *girt*, that is twenty-four inches in circumference) being measured after it is fallen.

In Yorkshire the prevailing practice is to sell the whole lot in the grofs, as it stands; the buyer agreeing to take it down and pay a sum certain for timber, top-wood, and bark (we speak more particularly of Oak-timber), without any retrospect as to quantity. This mode of selling saves some trouble; and when timber stands at a distance from the residence of the seller, the business is agreeably shortened: besides, he is not liable to be imposed upon by false measurement or other fraudulent practices. However, in other points of view, it is unpleasing and disadvantageous to the seller. The buyer being generally a professional man, and accustomed to the valuing of standing-timber, can ascertain its worth with a great degree of accuracy; whilst the seller, unpractised in the art of valuation, is under the necessity of employing an agent in the business, at whose mercy he lies, not only as to his judgement, but his honesty also.

In making a valuation of this kind, every tree is estimated separately, not only as to the quantity of timber it contains, but likewise as to its quality, or the use to which it is peculiarly adapted.

The method of *felling* depends upon two things : If the stubs or stools be intended to be kept alive for the purpose of throwing out coppice-wood, as in Kent and Surrey, or for raising a second crop of timber, as in Yorkshire, the trees ought to be felled high with a saw, leaving the stools six or eight inches above ground;—having great care not to strip off nor bruise their bark: but, if the ground be intended to be cleared, the trees ought either to be grubbed up entirely by the roots, or *grub-felled*, in the Norfolk manner; which is to cut off the roots close to the bottom of the stem, leaving this entire, with a conical piece of root annexed to it; so that this method gives more timber even than that of grubbing and afterwards cutting off the butts with a saw.

If the wood be intended to be *sprung* again, the stools ought to be freed from the timber and top-wood before the young shoots make their appearance, or great mischiefs must necessarily ensue.

Under the article *FENCES* we have declared against a *general fall* of Hedge-timber. But in a Wood, where the trees stand in contact with each other, a different conduct ought to be observed; more especially if it be designed to be re-sprung: for, in taking down the full-grown trees, the younger stands will, in all probability, be crushed, or at least maimed; and if they escape, they become injurious to the rising saplings.

Besides, it is observable, that single trees, left in this manner, (distinguished in Yorkshire by the name of *Wacers*) always receive a check, and generally become

become *stag-headed*; either from a change of atmosphere, which takes place upon the removal of their wonted shelter, or from a profusion of side-shoots, which, under these circumstances, are usually put forth, and which consequently draw off a part of the sap from the top;—or, perhaps, from the joint operation of these two causes.

Be this as it may, it is generally good management to clear away the whole to the stub: the coppice-wood, or second crop of saplings, will generally rise to more advantage than the *Waver*, besides an incumbrance being removed.

The best *time for taking down* timbers in general is winter, when the sap is at rest: in this country, however, the Oak may be considered as an exception to this general rule; for, notwithstanding the acknowledged superiority of the *timber* when taken down at that time, the value of the bark, which can only be stripped during the rise of the sap, in the Spring, or about Midsummer, is perhaps more than a compensation for the injury sustained in the quality of the timber.

The practice of barking trees, standing, and letting them remain upon their roots until the ensuing winter, has been strongly recommended; and has been tried in different parts of the kingdom, especially in Yorkshire. There is, we believe, no doubt as to the excellency of this method; but we are much afraid it will not readily be brought into general practice. The barking season is of short duration, and is generally a time of hurry and bustling;

bustling : indeed, if the undertaking be large, dispatch is necessary. The method of barking trees as they stand, is tedious in the first instance, besides incurring what, we fear, will always be considered as *two troubles*; namely, the barking and the felling. Nevertheless, the practice is highly recommendable to gentlemen who want to take down a few trees only for their own use; for although they are not, *in this case*, restricted by the general law relating to the bark, yet the value of the bark is too considerable to be thrown away.

In Norfolk it is sold upon the tree at so much per load of timber, the tanners employing their own peelers, and taking all the trouble upon themselves. The price of the bark generally runs from one-fifth to one-eighth part of the value of the timber; depending upon how the trees are *bung*, or furnished with branches.

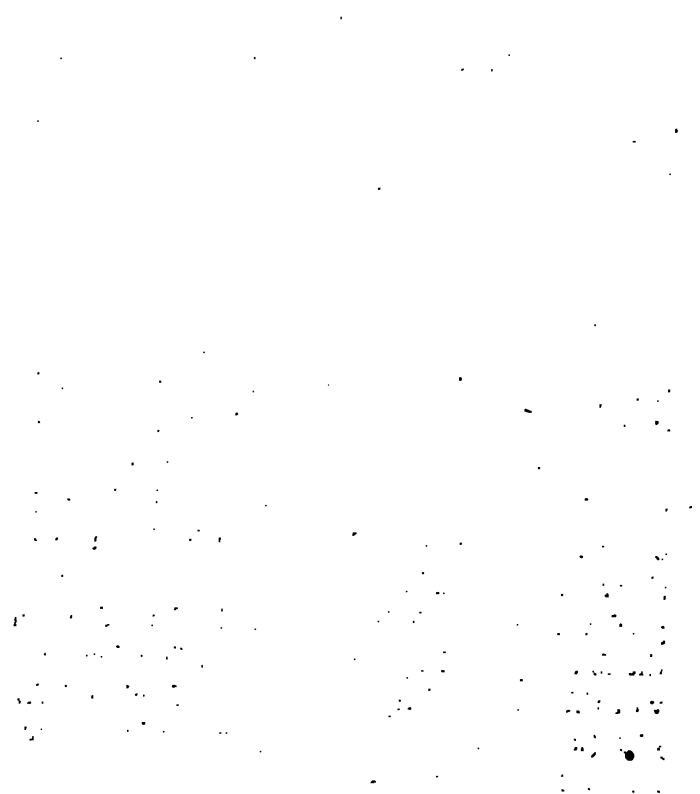
In the southern counties, bark is usually sold ready peeled, but in the north; whilst, in Yorkshire, it is generally *chopt* by the seller, and sold to the tanner by the quarter.

With respect to Coppice and Underwood, the time of felling depends, in some measure, upon the species, and if that be Oak, upon the age at which it is felled. On the hills of Surrey, where it is usually cut at seven or eight years old, for stakes and other purposes, it is generally felled in winter; but in places where it is suffered to stand fifteen or twenty years, for hop-poles, rails, &c. the Oak should be taken down in the barking season, not
only

only for the sake of the bark, but to guard against the worm.

Finally: with regard to the training of sapling timbers, the care and management principally requisite lie in keeping up the fences, and *weeding*—that is thinning—the young plants from time to time. The oftener this is repeated the more profit will generally arise. It is well to endeavour to train those shoots which spring from the lower parts of the stools; these being less liable to be split off by the wind than those which grow higher: in other respects, the conduct is much the same as that recommended in the section GROVES. The progress which those saplings will make depends upon the soil they stand upon: in ordinary situations they will rise to about forty feet high, and swell to *timber girth* (say from twenty to thirty inches in circumference) in forty years.

G R O U N D S,



G R O U N D S :

O R,

ORNAMENTAL PLANTATIONS.

MANKIND no sooner find themselves in full possession of the *necessaries* of life, than they begin to feel a want of its *conveniencies*; and these obtained, seldom fail of indulging in one or more of its various *refinements*. Some men delight in the luxuries of the imagination; others in those of the senses. One man finds his wants supplied in the delicacies of the table, whilst another flies to perfumes and essences for relief: few men are insensible to the gratifications of the ear; and men in general are susceptible of those of the eye. The imitative arts of painting and sculpture have been the study and delight of civilized nations in all ages; but the art of embellishing Nature herself has been reserved for this age, and for this nation!

A fact the more astonishing, as ornamented Nature is as much superior to a Painting or a Statue, as a "Reality is to a Representation;"—as the Man himself is to his Portrait. That the striking features—the beauties—of Nature, whenever

ever they have been *seen*, have always been *admired* by men of sense and refinement, is undoubtedly true; but why the good offices of art, in disclosing these beauties, and setting off those features to advantage, should have been so long confined to the human person alone, is, of all other facts in the History of Arts and Sciences, the most extraordinary.

The Translator of D'Ermenonville's Essay on Landscape has attempted to prove, in an introductory discourse, that the art is nothing *new*, for that it was *known* to the Antients, though not *practised*. But the evidences he produces go no farther than to shew, that the Antients were *admirers of Nature in a state of wildness*; for, whenever they attempted to *embellish* Nature, they appear to have been guided by a kind of Otaheitean taste; as the gardens of the Greeks and Romans, like those of the modern nations (until of late years in this country), convey to us no other idea than that of *Nature tatoo'd* *.

Mr. Burgh, in a Note to his ingenious Commentary upon Mr. Mason's beautiful poem *The English Garden*, confirms us in these ideas; and, by a quotation from the Younger Pliny, shews the just notions the Antients entertained of the powers of

* The inhabitants of Otaheitee, an island in the Southern hemisphere, ornament their bodies by making punctures in the skin with a sharp-pointed instrument, and call it *tatoo'ing*. The African Negroes are still grosser in their ideas of ornament, gashing their cheeks and temples in a manner similar to that practised by the English Butcher in ornamenting a shoulder of mutton, or a Dutch gardener in embellishing the environs of a mansion.

human

human invention, in associating and polishing the rougher scenes of Nature: for, after giving us a beautiful description of the natural scenery round his Tuscan villa, upon the banks of the Tiber, he acknowledges “ the view before him to resemble a
“ picture beautifully composed, rather than a work
“ of Nature accidentally delivered.”

We have been told that the English Garden is but a copy of the Gardens of the Chinese: this, however, is founded in Gallic envy rather than in truth; for though their style of Gardening may not admit of *tatooings* and *topiaryworks**, it has as little to do with natural scenery as the garden of an ancient Roman, or a modern Frenchman:—THE ART OF *assisting* NATURE is, undoubtedly, all our own.

It cannot fail of proving highly interesting to our Readers, to trace the rise of this delightful Art.

Mr. Walpole, in his *Anecdotes of Painting in England*, has favoured the Public with *The History of modern Taste in Gardening*. A pen guided by so masterly a hand must ever be productive of information and entertainment when employed upon a subject so truly interesting as that which is now before us. Desirous of conveying to our Readers all the information which we can compress with propriety within the limits of our plan, we wished to have given the *substance* of this valuable paper;

* Trees carved by a *Topiarius*, into the form of beasts, birds, &c.

but finding it already in the language of simplicity, and being aware of the mischiefs which generally ensue in *meddling* with the productions of genius, we had only one alternative; either wholly to transcribe, or wholly to reject. *This* we could not do, in strict justice to our Readers; for, besides giving us, in detail, the advancement of the art, it throws considerable light upon the art itself; and being only a small part of a work upon a different subject, it is the less likely to fall into the hands of those to whom it cannot fail of proving highly interesting. We are, therefore, induced to exceed our intended limits in this respect, by making a literal transcript; and hope, in the liberality of the Author, to be pardoned for so doing.

GARDENING was probably one of the first arts that succeeded to that of building houses, and naturally attended property and individual possession. Culinary, and afterwards medicinal herbs were the objects of every head of a family: it became convenient to have them within reach, without seeking them at random in woods, in meadows, and on mountains, as often as they were wanted. When the earth ceased to furnish spontaneously all these primitive luxuries, and culture became requisite, separate inclosures for rearing herbs grew expedient. Fruits were in the same predicament, and those most in use or that demand attention, must have entered into and extended the domestic inclosure. The good man Noah, we are told, planted a vineyard, drank of the wine, and was drunken, and every body knows the consequences. Thus we acquired kitchen-gardens, orchards, and vineyards. I am apprized that the prototype of all these sorts was the garden of Eden; but as that Paradise was a good deal larger than any we read of afterwards, being inclosed by the rivers Pison, Gihon, Hiddekel, and Euphrates, as every tree that was pleasant to the sight and good for food grew in it, and as two other trees were likewise found there, of which not a slip or sucker remains, it does not belong to the present discussion. After the Fall, no man living
was

was suffered to enter into the garden; and the poverty and necessities of our first ancestors hardly allowed them time to make improvements in their estates in imitation of it, supposing any plan had been preserved. A cottage and a slip of ground for a cabbage and a gooseberry-bush; such as we see by the side of a common, were in all probability the earliest seats and gardens: a well and bucket succeeded to the Pison and Euphrates. As settlements increased, the orchard and the vineyard followed; and the earliest princes of tribes possessed just the necessaries of a modern farmer.

Matters, we may well believe, remained long in this situation; and though the generality of mankind form their ideas from the import of words in their own age, we have no reason to think that for many centuries the term Garden implied more than a kitchen-garden or orchard. When a Frenchman reads of the garden of Eden, I do not doubt but he concludes it was something approaching to that of Versailles, with clipped hedges, berceaux, and trellis-work. If his devotion humbles him so far as to allow that, considering who designed it, there might be a labyrinth full of *Æsop's Fables*, yet he does not conceive that four of the largest rivers in the world were half so magnificent as an hundred fountains full of statues by Girardon. It is thus that the word Garden has at all times passed for whatever was understood by that term in different countries. But that it meant no more than a kitchen-garden or orchard for several centuries, is evident from those few descriptions that are preserved of the most famous gardens of antiquity.

That of Alcinous, in the *Odyssey*, is the most renowned in the heroic times. Is there an admirer of Homer who can read his description without rapture; or who does not form to his imagination a scene of delights more picturesque than the landscapes of Tinian or Juan Fernandez? Yet what was that boasted Paradise with which

the gods ordain'd
To grace Alcinous and his happy land? *Pope.*

Why, divested of harmonious Greek and bewitching poetry, it was a small orchard and vineyard, with some beds of herbs and two fountains that watered them, inclosed within a quick-set hedge. The whole compass of this pompous garden inclosed—four acres.

Four acres was th' allotted space of ground,
Fenc'd with a green inclosure all around.

The trees were apples, figs, pomegranates, pears, olives, and vines.

Tall thriving trees confess'd the fruitful mold;
 The redning apple ripens into gold.
 Here the blue fig with luscious juice o'erflows,
 With deeper red the full pomegranate glows.
 The branch here bends beneath the weighty pear,
 And verdant olives flourish round the year.

* * * * *
 Beds of all various herbs, for ever green,
 In beauteous order terminate the scene.

Alcinous's garden was planted by the poet, enriched by him with the fairy gift of eternal summer, and no doubt an effort of imagination surpassing any thing he had ever seen. As he has bestowed on the same happy prince a palace with brazen walls and columns of silver, he certainly intended that the garden should be proportionably magnificent. We are sure therefore that as late as Homer's age, an inclosure of four acres, comprehending orchard, vineyard and kitchen-garden, was a stretch of luxury the world at that time had never beheld.

The hanging gardens of Babylon were a still greater prodigy. We are not acquainted with their disposition or contents, but as they are supposed to have been formed on terrasses and the walls of the palace, whither soil was conveyed on purpose, we are very certain of what they were not; I mean they must have been trifling, of no extent, and a wanton instance of expence and labour. In other words, they were what sumptuous gardens have been in all ages till the present, unnatural, enriched by art, possibly with fountains, statues, balustrades, and summer-houses, and were any thing but verdant and rural.

From the days of Homer to those of Pliny, we have no traces to lead our guests to what were the gardens of the intervening ages. When Roman authors, whose climate instilled a wish for cool retreats, speak of their enjoyments in that kind, they sigh for grottos, caves, and the refreshing hollows of mountains, near irriguous and shady founts; or boast of their porticos, walks of planes, canals, baths and breezes from the sea. Their gardens are never mentioned as affording shade and shelter from the rage of the dog-star. Pliny has left us descriptions of two of his villas. As he used his Laurentine villa for his winter retreat, it is not surprising that the garden makes no considerable part of the account. All he says of it is, that the *gestatio* or place of exercise, which surrounded the garden (the latter consequently not being very large) was bounded by a hedge of box, and where that was perished, with rosemary; that there was a walk of vines, and that most of the trees were fig and mulberry, the soil not being proper for any other sorts.

On his Tuscan villa he is more diffuse; the garden makes a considerable part of the description:—and what was the principal

pal beauty of that pleasure-ground? Exactly what was the admiration of this country about threescore years ago; box-trees cut into monsters, animals, letters, and the names of the master and the artificer. In an age when architecture displayed all its grandeur, all its purity, and all its taste; when arose Vespasian's amphitheatre, the temple of Peace, Trajan's forum, Domitian's baths, and Adrian's villa, the ruins and vestiges of which still excite our astonishment and curiosity; a Roman consul, a polished emperor's friend, and a man of elegant literature and taste, delighted in what the mob now scarce admire in a college-garden. All the ingredients of Pliny's corresponded exactly with those laid out by London and Wise on Dutch principles. He talks of slopes, terrasses, a wilderness, shrubs methodically trimmed, a marble basin, * pipes spouting water, a cascade falling into the basin, bay-trees, alternately planted with planes, and a strait walk, from whence issued others parted off by hedges of box, and apple-trees, with obelisks placed between every two. There wants nothing but the embroidery of a parterre, to make a garden in the reign of Trajan serve for a description of one in that of king William†. In one passage above Pliny seems to have conceived that natural irregularity might be a beauty; *in opere urbanissimo*, says he, *subita velut illati ruris imitatio*. Something like a rural view was contrived amidst so much polished composition. But the idea soon vanished, lineal walks immediately enveloped the slight scene, and names and inscriptions in box again succeeded to compensate for the daring introduction of nature.

In the paintings found at Herculaneum are a few traces of gardens, as may be seen in the second volume of the prints. They are small square inclosures, formed by trellis-work, and espaliers‡,

* The English gardens described by Hentzner in the reign of Elizabeth, are exact copies of those of Pliny. In that at Whitehall was a sun-dial and jet-d'eau, which on turning a cock spouted out water and sprinkled the spectators. In lord Burleigh's at Theobald's were obelisks, pyramids, and circular porticos, with cisterns of lead for bathing. At Hampton-court the garden walls were covered with rosemary, a custom, he says, very common in England. At Theobald's was a labyrinth also, an ingenuity I shall mention presently to have been frequent in that age.

† Dr. Plot, in his Natural History of Oxfordshire, p. 380, seems to have been a great admirer of trees carved into the most heterogeneous forms, which he calls *topiary works*, and quotes one Laurembergius for saying that the English are as expert as most nations in that kind of sculpture, for which Hampton-court was particularly remarkable. The Doctor then names other gardens that flourished with animals and castles, formed *arte topiaria*, and above all a wren's nest that was capacious enough to receive a man to sit on a seat made within it for that purpose.

‡ At Warwick-castle is an ancient suit of arras, in which there is a garden exactly resembling these pictures of Herculaneum.

and regularly ornamented with vases, fountains and careatides, elegantly symmetrical, and proper for the narrow spaces allotted to the garden of a house in a capital city. From such I would not banish those playful waters that refresh a sultry mansion in town, nor the neat trellis, which preserves its wooden verdure better than natural greens exposed to dust. Those treillages in the gardens at Paris, particularly on the Boulevard, have a gay and delightful effect.—They form light corridors, and transpicuous arbours through which the sun-beams play and chequer the shade, set off the statues, vases, and flowers, that marry with their gaudy hotels, and suit the gallant and idle society who paint the walks between their parterres, and realize the fantastic scenes of Watteau and Dürer.

From what I have said, it appears how naturally and insensibly the idea of a kitchen-garden slid into that which has for so many ages been peculiarly termed a Garden, and by our ancestors in this country, distinguished by the name of a Pleasure-garden. A square piece of ground was originally parted off in early ages for the use of the family :—to exclude cattle and ascertain the property it was separated from the fields by a hedge. As pride and desire of privacy increased, the inclosure was dignified by walls ; and in climes where fruits were not lavished by the ripening glow of nature and soil, fruit-trees were assisted and sheltered from surrounding winds by the like expedient ; for the inundation of luxuries which have swelled into general necessities, have almost all taken their source from the simple fountain of reason.

When the custom of making square gardens inclosed with walls was thus established, to the exclusion of nature and prospect *, pomp and solitude combined to call for something that might enrich and enliven the insipid and unanimated partition. Fountains, first invented for use, which grandeur loves to disguise and throw out of the question, received embellishments from costly marbles, and at last, to contradict utility, tossed their waste of waters into air in spouting columns. Art, in the hands of rude man, had at first been made a succedaneum to nature ; in the hands of ostentatious wealth, it became the means of opposing nature ; and the more it traversed the march of the latter, the more nobility thought its power was demonstrated. Canals measured by the line were introduced in lieu of meandering streams, and terraces were hoisted aloft in oppo-

* It was not uncommon, after the circumadjacent country had been shut out, to endeavour to recover it by raising large mounts of earth to peep over the walls of the garden.

sition to the facile slopes that imperceptibly unite the valley to the hill. Balustrades defended these precipitate and dangerous elevations, and flights of steps rejoined them to the subjacent flat from which the terraces had been dug. Vases and sculpture were added to these unnecessary balconies, and statues furnished the lifeless spot with mimic representations of the excluded sons of men. Thus difficulty and expence were the constituent parts of those sumptuous and selfish solitudes; and every improvement that was made, was but a step farther from nature. The tricks of water-works to wet the unwary, not to refresh the panting spectator, and parterres embroidered in patterns like a petticoat, were but the childish endeavours of fashion and novelty to reconcile greatness to what it had surfeited on. To crown these impotent displays of false taste, the sheers were applied to the lovely wildness of form with which nature has distinguished each various species of tree and shrub. The venerable Oak, the romantic Beech, the useful Elm, even the aspiring circuit of the Lime, the regular round of the Chestnut, and the almost moulded Orange-tree, were corrected by such fantastic admirers of symmetry. The compass and square were of more use in plantations than the nursery-man. The measured walk, the quincunx, and the étoile, imposed their unsatisfying sameness on every royal and noble garden. Trees were headed, and their sides pared away; many French groves seem green chests set upon poles. Seats of marble, arbours, and summer-houses, terminated every vista; and symmetry, even where the space was too large to permit its being remarked at one view, was so essential, that, as Pope observed,

—————each alley has a brother,
And half the garden just reflects the other.

Knots of flowers were more defensibly subjected to the same regularity. Leisure, as Milton expressed it,

in trim gardens took his pleasure.

In the garden of Marshal de Biron at Paris, consisting of fourteen acres, every walk is buttoned on each side by lines of flower-pots, which succeed in their seasons. When I saw it, there were nine thousand pots of Asters, or la Reine Marguerite.

We do not precisely know what our ancestors meant by a bower, it was probably an arbour; sometimes it meant the whole frittered inclosure, and in one instance it certainly included a labyrinth. Rosamond's bower was indisputably of that kind, though whether composed of walls or hedges we

cannot determine *. A square and a round labyrinth were the capital ingredients of a garden formerly, that in Du Cerceau's architecture, who lived in the time of Charles IX. and Henry III. there is scarce a ground-plot without one of each. The enchantment of antique appellations has consecrated a pleasing idea of a royal residence, of which we now regret the extinction. Haunting in the Bower, the jointure of many dowager queens, conveys to us the notion of a romantic scene.

In Kip's Views of the Seats of our Nobility and Gentry, we see the same tiresome and returning uniformity. Every house is approached by two or three gardens, consisting perhaps of a gravel-walk and two grass-plats, or borders of flowers. Each rises above the other by two or three steps, and as many walks and terraces, and so many iron gates, that we recollect those ancient romances, in which every entrance was guarded by nymphs or dragons. At Lady Orford's, at Piddletown, in Dorsetshire, there was, when my brother married, a double inclosure of thirteen gardens, each I suppose not much above an hundred yards square, with an enfilade of correspondent gates; and before you arrived at these, you passed a narrow gut between two stone terraces, that rose above your head, and which were crowned by a line of pyramidal yews. A bowling-green was all the lawn admitted in those times, a circular lake the extent of magnificence.

Yet though these and such preposterous inconveniencies prevailed from age to age, good sense in this country had perceived the want of something at once more grand and more natural. These reflections, and the bounds set to the waste made by royal spoilers, gave origin to Parks. They were contracted forests, and extended gardens. Hentzner says, that, according to Rous of Warwick, the first park was that at Woodstock. If so, it might be the foundation of a legend that Henry II. secured his mistress in a labyrinth: it was no doubt more difficult to find her in a park than in a palace, where the intricacy of the woods and various lodges buried in covert might conceal her actual habitation.

It is more extraordinary that having so long ago stumbled on the principle of modern gardening, we should have persisted in retaining its reverse, symmetrical and unnatural gardens. That parks were rare in other countries, Hentzner, who travel-

* Drayton, in a note to his Epistle of Rosamond, says, her labyrinth was built of vaults under ground, arched and walled with brick and stone; but, as Mr. Gough observes, he gives no authority for that assertion. V. pref. to 2d edit. of British Topography, p. xxx. Such vaults might remain to Drayton's time, but did not prove that there had been no superstructure,

led over great part of Europe, leads us to suppose, by observing that they were common in England. In France they retain the name, but nothing is more different both in compass and disposition. Their parks are usually square or oblong inclosures, regularly planted with walks of chefnuts or limes, and generally every large town has one for its public recreation. They are exactly like Burton's-court, at Chelsea-college, and rarely larger.

One man, one great man we had, on whom nor education nor custom could impose their prejudices; who, "on evil days
"though fallen, and with darkness and solitude compassed
"round," judged that the mistaken and fantastic ornaments he had seen in gardens, were unworthy of the Almighty Hand that planted the delights of Paradise. He seems, with the prophetic eye of taste [as I have heard taste well * defined], to have conceived, to have foreseen modern gardening; as Lord Bacon announced the discoveries since made by experimental philosophy. The description of Eden is a warmer and more just picture of the present style than Claud Lorrain could have painted from Hagley or Stourhead. The first lines I shall quote exhibit Stourhead on a more magnificent scale.

Thro' Eden went a river large,
Nor chang'd his course, but thro' the shaggy hill
Pass'd underneath ingulph'd, for God had thrown
That mountain as his garden-mound, high rais'd
Upon the rapid current——

Hagley seems pictured in what follows :

which thro' veins
Of porous earth with kindly thirst updrawn,
Rose a fresh fountain, and with many a rill
Water'd the garden——

What colouring, what freedom of pencil, what landscape in these lines !

——from that sapphire fount the crisped brooks,
Rolling on orient pearl and sands of gold,
With mazy error under pendent shades
Ran nectar, visiting each plant, and fed
Flowers worthy of Paradise, which not *nice art*
In beds and curious knots, but *nature* boon
Pour'd forth profuse on hill and dale and plain,

* By the great Lord Chatham, who had a good taste himself in modern gardening, as he shewed by his own villas in Enfield Chase and at Hayes.

Both where the morning sun first warmly smote
 The open field, and where the unpierc'd shade
 Imbrown'd the noon-tide bow'rs.—*Thus was this place*
A happy rural seat of various view.

Read this transporting description, paint to your mind the scenes that follow, contrast them with the savage but respectable terror with which the poet guards the bounds of his Paradise, fenced

——with the champaign head
 Of a steep wilderness, whose hairy sides
 With thicket overgrown, grotesque and wild,
 Access denied; and over head upgrew
 Insuperable height of loftiest shade,
 Cedar and pine, and fir, and branching palm, }
 A sylvan scene, and, as the ranks ascend,
 Shade above shade, a woody theatre
 Of stateliest view——

and then recollect that the author of this sublime vision had never seen a glimpse of any thing like what he has imagined, that his favourite ancients had dropped not a hint of such divine scenery, and that the conceits in Italian gardens, and Theobalds and Nonfuch, were the brightest originals that his memory could furnish. His intellectual eye saw a nobler plan, so little did he suffer by the loss of sight. It sufficed him to have seen the materials with which he could work. The vigour of a boundless imagination told him how a plan might be disposed, that would embellish nature, and restore art to its proper office, the just improvement or imitation of it*.

It is necessary that the concurrent testimony of the age should swear to posterity that the description above quoted was written above half a century before the introduction of modern gardening, or our incredulous descendants will defraud the poet of half his glory, by being persuaded that he copied some garden or gardens he had seen — so minutely do his ideas correspond with the present standard. But what shall we say for that intervening half century who could read that plan and never attempt to put it in execution?

Now let us turn to an admired writer, posterior to Milton, and see how cold, how insipid, how tasteless is his account of what he pronounced a perfect garden. I speak not of his style, which it was not necessary for him to animate with the colouring and glow of poetry. It is his want of ideas, of imagination, of taste,

* Since the above was written, I have found Milton praised and Sir William Temple censured, on the same foundations, in a poem called *The Rise and Progress of the present Taste in Planting*, printed in 1767.

that

that I censure, when he dictated on a subject that is capable of all the graces that a knowledge of beautiful nature can bestow. Sir William Temple was an excellent man; Milton, a genius of the first order.

We cannot wonder that Sir William declares in favour of parterres, fountains, and statues, as necessary to break the sameness of large grass-plats, which he thinks have an ill effect upon the eye, when he acknowledges that he discovers fancy in the gardens of Alcinous. Milton studied the Antients with equal enthusiasm, but no bigotry, and had judgment to distinguish between the want of invention and the beauties of poetry. Compare his Paradise with Homer's Garden, both ascribed to a celestial design. For Sir William, it is just to observe, that his ideas centered in a fruit-garden. He had the honour of giving to his country many delicate fruits, and he thought of little else than disposing them to the best advantage. Here is the passage I proposed to quote; it is long, but I need not make an apology to the reader for entertaining him with any other words instead of my own.

"The best figure of a garden is either a square or an oblong, and either upon a flat or a descent: they have all their beauties, but the best I esteem an oblong upon a descent. The beauty, the air, the view, makes amends for the expence, which is very great in finishing and supporting the terras-walks, in levelling the parterres, and in the stone-stairs that are necessary from one to the other.

"The perfectest figure of a garden I ever saw, either at home or abroad, was that of Moor-park in Hertfordshire, when I knew it about thirty years ago. It was made by the Countess of Bedford, esteemed among the greatest wits of her time, and celebrated by Doctor Donne; and with very great care, excellent contrivance, and much cost; but greater sums may be thrown away without effect or honour, if there want sense in proportion to money, or *if nature be not followed*, which I take to be the great rule in this, and perhaps in every thing else, as far as the conduct not only of our lives but our governments." [We shall see how *natural* that admired garden was.]

"Because I take * the garden I have named to have been in all kinds the most beautiful and perfect, at least in the figure and disposition, that I have ever seen, I will describe it for a model to those that meet with such a situation, and are above the regards of common expence. It lies on the side of a hill,

* This garden seems to have been made after the plan laid down by Lord Bacon in his 46th Essay, to which, that I may not multiply quotations, I will refer the reader.

upon which the house stands, but not very steep. The length of the house, where the best rooms and of most use or pleasure are, lies upon the breadth of the garden; the great parlour opens into the middle of a terras gravel-walk that lies even with it, and which may lie, as I remember, about three hundred paces long, and broad in proportion; the border set with standard laurels and at large distances, which have the beauty of orange-trees out of flower and fruit. From this walk are three descents by many stone steps, in the middle and at each end, into a very large parterre. This is divided into quarters by gravel-walks, and adorned with two fountains and eight statues in the several quarters. At the end of the terras-walk are two summer-houses, and the sides of the parterre are ranged with two large cloisters open to the garden, upon arches of stone, and ending with two other summer-houses even with the cloisters, which are paved with stone, and designed for walks of shade, there being none other in the whole parterre. Over these two cloisters are two terraces covered with lead and fenced with balusters; and the passage into these airy walks is out of the two summer-houses at the end of the first terras-walk. The cloister facing the south is covered with vines, and would have been proper for an orange-house, and the other for myrtles or other more common greens, and had, I doubt not, been cast for that purpose, if this piece of gardening had been then in as much vogue as it is now.

“ From the middle of this parterre is a descent by many steps flying on each side of a grotto that lies between them, covered with lead and flat, into the lower garden, which is all fruit-trees ranged about the several quarters of a wilderness which is very shady; the walks here are all green, the grotto embellished with figures of shell rock-work, fountains, and water-works. If the hill had not ended with the lower garden, and the wall were not bounded by a common way that goes through the park, they might have added a third quarter of all greens; but this want is supplied by a garden on the other side the house, which is all of that sort, very wild, shady, and adorned with rough rock-work and fountains.

“ This was Moor-park when I was acquainted with it, and the sweetest place, I think, that I have seen in my life, either before or since, at home or abroad.”—

I will make no farther remarks on this description. Any man might design and *build* as sweet a garden, who had been born in and never stirred out of Holborn. It was not peculiar to Sir William Temple to think in that manner. How many Frenchmen are there who have seen *our* gardens, and still prefer *natural* flights of steps and shady cloisters covered with lead!

Le

Le Nautre, the architect of the groves and grottos at Versailles, came hither on a mission to improve our taste. He planted St. James's and Greenwich Parks—no great monuments of his invention.

To do farther justice to Sir William Temple, I must not omit what he adds. "What I have said of the best forms of gardens is meant only of such as are in some sort regular; for there may be other forms wholly irregular, that may, for aught I know, have more beauty than any of the others; but they must owe it to some extraordinary dispositions of nature in the seat, or some great race of fancy or judgment in the contrivance, which may reduce many disagreeing parts into some figure, which shall yet, upon the whole, be very agreeable. Something of this I have seen in some places, but heard more of it from others, who have lived much among the Chinese, a people whose way of thinking seems to lie as wide of ours in Europe as their country does. Their greatest reach of imagination is employed in contriving figures, where the beauty shall be great and strike the eye, but without any order or disposition of parts, that shall be commonly or easily observed. And though we have hardly any notion of this sort of beauty, yet they have a particular word to express it; and where they find it hit their eye at first sight, they say the *Sharawadgi* is fine or is admirable, or any such expression of esteem:—but I should hardly advise any of these attempts in the figure of gardens among us; they are adventures of too hard achievement for any common hands; and though there may be more honour if they succeed well, yet there is more dishonour if they fail, and it is twenty to one they will; whereas in regular figures it is hard to make any great and remarkable faults."

Fortunately Kent and a few others were not quite so timid, or we might still be going up and down stairs in the open air.

It is true, we have heard much lately, as Sir William Temple did, of irregularity and imitations of nature in the gardens or grounds of the Chinese. The former is certainly true: they are as whimsically irregular as European gardens are formally uniform, and unvaried:—but with regard to nature, it seems as much avoided, as in the squares and oblongs and strait lines of our ancestors. An artificial perpendicular rock starting out of a flat plain, and connected with nothing, often pierced through in various places with oval hollows, has no more pretension to be deemed natural than a lineal terrace or a parterre. The late Mr. Joseph Spence, who had both taste and zeal for the present style, was so persuaded of the Chinese Emperor's pleasure-ground being laid out on principles resembling ours, that he

translated

translated and published, under the name of Sir Harry Beaumont, a particular account of that inclosure from the Collection of the Letters of the Jesuits. I have looked it over, and, except a determined irregularity, can find nothing in it that gives me any idea of attention being paid to nature. It is of vast circumference, and contains 200 palaces, besides as many contiguous for the eunuchs, all gilt, painted, and varnished. There are raised hills from 20 to 60 feet high, streams and lakes, and one of the latter five miles round. These waters are passed by bridges:—but even their bridges must not be strait—they serpentine as much as the rivulets, and are sometimes so long as to be furnished with resting-places, and begin and end with triumphal arches. Methinks a strait canal is as rational at least as a meandering bridge. The colonades undulate in the same manner. In short, this pretty gaudy scene is the work of caprice and whim, and, when we reflect on their buildings, presents no image but that of unsubstantial tawdriness. Nor is this all. Within this fantastic Paradise is a square town, each side a mile long. Here the eunuchs of the court, to entertain his Imperial Majesty with the bustle and business of the capital in which he resides, but which it is not of his dignity ever to see, act merchants and all sorts of trades, and even designedly exercise for his royal amusement every art of knavery that is practised under his auspicious government. Methinks this is the childish solace and repose of grandeur, not a retirement from affairs to the delights of rural life. Here too his Majesty plays at agriculture: there is a quarter set apart for that purpose; the eunuchs sow, reap, and carry in their harvest, in the imperial presence; and his Majesty returns to Peking, persuaded that he has been in the country*.

Having

* The French have of late years adopted our style in gardens, but chusing to be fundamentally obliged to more remote rivals, they deny us half the merit, or rather the originality of the invention, by ascribing the discovery to the Chinese, and by calling our taste in gardening *Le Gout Anglo-Chinois*. I think I have shewn that this is a blunder, and that the Chinese have passed to one extremity of absurdity, as the French and all antiquity had advanced to the other, both being equally remote from nature; regular formality is the opposite point to fantastic *Sharawadgis*. The French, indeed, during the fashionable paroxysm of philosophy, have surpassed us, at least in meditation on the art. I have perused a grave treatise of recent date, in which the author, extending his views beyond mere luxury and amusement, has endeavoured to inspire his countrymen, even in the gratification of their expensive pleasures, with benevolent projects. He proposes to them to combine gardening with charity, and to make every step of their walks an act of generosity and a lesson of morality. Instead of adorning favourite points with a heathen temple, a Chinese pagoda, a Gothic tower, or fictitious bridge, he proposes to them at the

Having thus cleared my way by ascertaining what have been the ideas on gardening in all ages, as far as we have materials to judge by, it remains to shew to what degree Mr. Kent invented the new style, and what hints he had received to suggest and conduct his undertaking.

We have seen what Moor-park was, when pronounced a standard. But as no succeeding generation in an opulent and luxurious country contents itself with the perfection established by its ancestors, more perfect perfection was still sought; and improvements had gone on, till London and Wise had stocked our gardens with giants, animals, monsters*, coats of arms, and mottos, in yew, box and holly. Absurdity could go no farther, and the tide turned. Bridgman, the next fashionable designer of gardens, was far more chaste; and whether from good sense, or that the nation had been struck and reformed by the admirable paper in the Guardian, N° 173, he banished verdant sculpture, and did not even revert to the square precision of the foregoing age. He enlarged his plans, disdained to make every division tally to its opposite, and though he still adhered much to strait walks with high clipped hedges, they were only his great lines; the rest he diversified by wil-

first resting-place to erect a school, a little farther to found an academy, at a third distance a manufacture, and at the termination of the park to endow a hospital. Thus, says he, the proprietor would be led to meditate, as he saunters, on the different stages of human life, and both his expence and thoughts would march in a progression of patriotic acts and reflections. When he was laying out so magnificent, charitable, and philosophic an Utopian villa, it would have cost no more to have added a foundling-hospital, a senate-house, and a burying-ground.—If I smile at such visions, still one must be glad that in the whirl of fashions, beneficence should have its turn in vogue; and though the French treat the Virtues like every thing else, but as an object of mode, it is to be hoped that they too will, every now and then, come into fashion again. The author I have been mentioning reminds me of a French gentleman, who some years ago made me a visit at Strawberry-hill. He was so complaisant as to commend the place, and to approve our taste in gardens—but in the same style of thinking with the above-cited author, he said, “I do not like your imaginary temples and fictitious terminations of views: I would have real points of view with moving objects; for instance, here I would have—(I forget what)—and there a watering-place.” “That is not so easy (I replied); one cannot oblige others to assemble at such or such a spot for one’s amusement—however, I am glad you would like a watering-place, for *there* happens to be one: in that creek of the Thames the inhabitants of the village do actually water their horses; but I doubt whether, if it were not *convenient* to them to do so, they would frequent the spot only to enliven my prospect.”—Such Gallo-Chinois gardens, I apprehend, will rarely be executed.

† On the piers of a garden-gate not far from Paris I observed two very coquet sphinxes. These lady monsters had straw hats gracefully smart on one side of their heads, and silken cloaks half veiling their necks; all executed in stone.

derness,

dernefs, and with loofe groves of oak, though ftill within furlounding hedges. I have obferved in the garden * at Gubbins in Hertfordfhire many detached thoughts, that ftongly indicate the dawn of modern tafte. As his reformation gained footing, he ventured farther, and in the royal garden at Richmond dared to introduce cultivated fields, and even morfels of a foreft appearance, by the fides of thofe endlefs and tirefome walks, that ftretched out of one into another without intermiffion. But this was not till other innovators had broke loofe too from rigid fymmetry.

But the capital ftroke, the leading ftap to all that has followed, was [I believe the firft thought was Bridgman's] the deftrudtion of walls for boundaries, and the invention of foffes—an attempt then deemed fo aftonifhing, that the common people called them Ha! Ha's! to exprefs their furprize at finding a fudden and unperceived check to their walk.

One of the firft gardens planted in this fimple though ftill formal ftyle, was my father's at Houghton. It was laid out by Mr. Eyre, an imitator of Bridgman. It contains three-and-twenty acres, then reckoned a confiderable portion.

I call a fank fence the leading ftap, for thefe reafons. No fooner was this fimple enchantment made, than levelling, mowing, and rolling, followed. The contiguous ground of the park without the fank fence was to be harmonized with the lawn within; and the garden in its turn was to be fet free from its prim regularity, that it might affort with the wilder country without. The fank fence afcertained the fpecific garden, but that it might not draw too obvious a line of diftinction between the neat and the rude, the contiguous out-lying parts came to be included in a kind of general defign; and when nature was taken into the plan, under improvements, every ftap that was made, pointed out new beauties and infpired new ideas. At that moment appeared Kent, painter enough to tafte the charms of landfcape, bold and opinionative enough to dare and to dictate, and born with a genius to ftroke out a great fystem from the twilight of imperfect effays. He leaped the fence, and faw that all nature was a garden. He felt the delicious contrast of hill and valley changing imperceptibly into each other, taftef the beauty of the gentle fwell or concave fcoop, and remarked how loofe groves crowned an eafy eminence with happy ornament, and while

* The feat of the late Sir Jeremy Sanbroke. It had formerly belonged to Lady More, mother-in-law of Sir Thomas More, and had been tyrannically wrenched from her by Henry VIII. on the execution of Sir Thomas, though not her fon, and though her jointure from a former husband.

they

they called in the distant view between their graceful stems, removed and extended the perspective by delusive comparison.

Thus the pencil of his imagination bestowed all the arts of landscape on the scenes he handled. The great principles on which he worked were perspective, and light and shade. Groups of trees broke too uniform or too extensive a lawn; evergreens and woods were opposed to the glare of the champaign; and where the view was less fortunate, or so much exposed as to be beheld at once, he blotted out some parts by thick shades, to divide it into variety, or to make the richest scene more enchanting by reserving it to a farther advance of the spectator's step. Thus, selecting favourite objects, and veiling deformities by screens of plantation; sometimes allowing the rudest waste to add its foil to the richest theatre; he realized the compositions of the greatest masters in painting. Where objects were wanting to animate his horizon, his taste as an architect could bestow immediate termination. His buildings, his seats, his temples, were more the works of his pencil than of his compasses. We owe the restoration of Greece and the diffusion of architecture to his skill in landscape.

But of all the beauties he added to the face of this beautiful country, none surpassed his management of water. Adieu to canals, circular basins, and cascades tumbling down marble steps, that last absurd magnificence of Italian and French villas. The forced elevation of cataracts was no more. The gentle stream was taught to serpentine seemingly at its pleasure, and where discontinued by different levels, its course appeared to be concealed by thickets properly interspersed, and glittered again at a distance where it might be supposed naturally to arrive. Its borders were smoothed, but preserved their waving irregularity. A few trees scattered here and there on its edges sprinkled the tame bank that accompanied its meanders; and when it disappeared among the hills, shades descending from the heights leaned towards its progress, and framed the distant point of light under which it was lost, as it turned aside to either hand of the blue horizon.

Thus, dealing in none but the colours of nature, and catching its most favourable features, men saw a new creation opening before their eyes. The living landscape was chastened or polished, not transformed. Freedom was given to the forms of trees; they extended their branches unrestricted, and where any eminent Oak, or master Beech, had escaped maiming and survived the forest, bush and bramble was removed, and all its honours were restored to distinguish and shade the plain. Where the united plumage of an ancient wood extended wide its undulating canopy, and stood venerable in its darkness, kept
thinned

thinned the foremost ranks, and left but so many detached and scattered trees, as softened the approach of gloom, and blended a chequered light with the thus lengthened shadows of the remaining columns.

Succeeding artists have added new master-strokes to these touches; perhaps improved or brought to perfection some that I have named. The introduction of foreign trees and plants, which we owe principally to Archibald Duke of Argyle, contributed essentially to the richness of colouring so peculiar to our modern landscape. The mixture of various greens, the contrast of forms between our forest-trees and the northern and West-Indian firs and pines, are improvements more recent than Kent, or but little known to him. The Weeping-willow and every florid shrub, each tree of delicate or bold leaf, are new tints in the composition of our gardens. The last century was certainly acquainted with many of those rare plants we now admire. The Weymouth-pine has long been naturalized here; the patriarch plant still exists at Longleat. The light and graceful Acacia was known as early; witness those ancient stems in the court of Bedford-house in Bloomsbury-square; and in the Bishop of London's garden at Fulham are many exotics of very ancient date. I doubt therefore whether the difficulty of preserving them in a clime so foreign to their nature did not convince our ancestors of their inutility in general; unless the shapeliness of the lime and horse-chestnut, which accorded so well with established regularity, and which thence and from their novelty grew in fashion, did not occasion the neglect of the more curious plants.

But just as the encomiums are that I have bestowed on Kent's discoveries, he was neither without assistance or faults. Mr. Pope undoubtedly contributed to form his taste. The design of the Prince of Wales's garden at Carlton-house was evidently borrowed from the Poet's at Twickenham. There was a little of affected modesty in the latter, when he said, of all his works he was most proud of his garden. And yet it was a singular effort of art and taste to impress so much variety and scenery on a spot of five acres. The passing through the gloom from the grotto to the opening day, the retiring and again assembling shades, the dusky groves, the larger lawn, and the solemnity of the termination at the cypresses that lead up to his mother's tomb, are managed with exquisite judgment; and though Lord Peterborough assisted him

To form his quincunx and to rank his vines,

those were not the most pleasing ingredients of his little perspective.

I do

I do not know whether the disposition of the garden at Rousham, laid out for General Dormer, and in my opinion the most engaging of all Kent's works, was not planned on the model of Mr. Pope's, at least in the opening and retiring shades of Venus's Vale. The whole is as elegant and antique as if the Emperor Julian had selected the most pleasing solitude about Daphne to enjoy a philosophic retirement.

That Kent's ideas were but rarely great, was in some measure owing to the novelty of his art. It would have been difficult to have transported the style of gardening at once from a few acres to tumbling of forests: and though new fashions like new religions, [which are new fashions] often lead men to the most opposite excesses, it could not be the case in gardening, where the experiments would have been so expensive. Yet it is true too that the features in Kent's landscapes were seldom majestic. His clumps were puny, he aimed at immediate effect, and planted not for futurity. One sees no large woods sketched out by his direction. Nor are we yet entirely risen above a too great frequency of small clumps, especially in the elbows of serpentine rivers. How common to see three or four beeches, then as many larches, a third knot of cypresses, and a revolution of all three! Kent's last designs were in a higher style, as his ideas opened on success. The north terrace at Claremont was much superior to the rest of the garden.

A return of some particular thoughts was common to him with other painters, and made his hand known. A small lake edged by a winding bank with scattered trees that led to a seat at the head of the pond, was common to Claremont, Esher, and others of his designs. At Esher,

Where Kent and Nature vied for Pelham's love,

the prospects more than aided the Painter's genius—they marked out the points where his art was necessary or not; but thence left his judgment in possession of all its glory.

Having routed professed art, for the modern gardener exerts his talents to conceal his art, Kent, like other reformers, knew not how to stop at the just limits. He had followed Nature, and imitated her so happily, that he began to think all her works were equally proper for imitation. In Kensington garden he planted dead trees, to give a greater air of truth to the scene—but he was soon laughed out of this excess. His ruling principle was, that Nature abhors a straight line. His mimics, for every genius has his apes, seemed to think that she could love nothing but what was crooked. Yet so many men of taste of all ranks devoted themselves to the new improvements, that it is surprizing how much beauty has been struck out, with how

few absurdities. Still in some lights the reformation seems to me to have been pushed too far. Though an avenue crossing a park or separating a lawn, and intercepting views from the seat to which it leads, are capital faults, yet a great avenue * cut through woods, perhaps before entering a park, has a noble air, and

Like footmen running before coaches
To tell the inn what lord approaches,

announces the habitation of some man of distinction. In other places the total banishment of all particular neatness immediately about a house, which is frequently left gazing by itself in the middle of a park, is a defect. Sheltered and even close walks in so very uncertain a climate as ours, are comforts ill exchanged for the few picturesque days that we enjoy: and whenever a family can purloin a warm and even something of an old-fashioned garden from the landscape designed for them by the undertaker in fashion, without interfering with the picture, they will find satisfactions on those days that do not invite strangers to come and see their improvements.

Fountains have with great reason been banished from gardens as unnatural; but it surprises me that they have not been allotted to their proper positions, to cities, towns, and the courts of great houses, as proper accompaniments to architecture, and as works of grandeur in themselves. Their decorations admit the utmost invention, and when the waters are thrown up to different stages, and tumble over their border, nothing has a more imposing or a more refreshing sound. A palace demands its external graces and attributes, as much as a garden. Fountains and cypresses peculiarly become buildings, and no man can have been at Rome, and seen the vast basins of marble dashed with perpetual cascades in the area of St. Peter's, without retaining an idea of taste and splendor. Those in the Piazza Navona are as useful as sublimely conceived.

Grottos in this climate are recesses only to be looked at transiently. When they are regularly composed within of symmetry and architecture, as in Italy, they are only splendid improprieties. The most judiciously, indeed most fortunately,

* Of this kind one of the most noble is that of Stanstead, the seat of the Earl of Halifax, traversing an ancient wood for two miles and bounded by the sea. The very extensive lawns at that seat, richly inclosed by venerable beech woods, and chequered by single beeches of vast size, particularly when you stand in the portico of the temple and survey the landscape that wastes itself in rivers of broken sea, recall such exact pictures of Claud Lorrain, that it is difficult to conceive that he did not paint them from this very spot.

placed

placed grotto, is that at Stourhead, where the river bursts from the urn of its god, and passes on its course through the cave.

But it is not my business to lay down rules for gardens, but to give the history of them. A system of rules pushed to a great degree of refinement, and collected from the best examples and practice, has been lately given in a book intitled, *Observations on Modern Gardening*. The work is very ingeniously and carefully executed, and in point of utility rather exceeds than omits any necessary directions. The author will excuse me if I think it a little excess, when he examines that rude and unappropriated scene of Matlock-bath, and criticises Nature for having bestowed on the rapid river Derwent too many cascades. How can this censure be brought home to gardening? The management of rocks is a province can fall to few directors of gardens; still in our distant provinces such a guide may be necessary.

The author divides his subject into gardens, parks, farms, and ridings. I do not mean to find fault with this division. Directions are requisite to each kind, and each has its department at many of the great scenes from whence he drew his observations. In the historic light, I distinguish them into the garden that connects itself with a park, into the ornamented farm, and into the forest or savage garden. Kent, as I have shewn, invented or established the first sort. Mr. Philip Southcote founded the second or *ferme ornée* *, of which is a very just description in the author I have been quoting. The third I think he has not enough distinguished. I mean that kind of alpine scene, composed almost wholly of pines and firs, a few birch, and such trees as assimilate with a savage and mountainous country. Mr. Charles Hamilton, at Pain's-hill, in my opinion has given a perfect example of this mode in the utmost boundary of his garden. All is great and foreign and rude; the walks seem not designed, but cut through the wood of pines; and the style of the whole is so grand, and conducted with so serious an air of wild and uncultivated extent, that when you look down on this seeming forest, you are amazed to find it contain a very few acres. In general, except as a screen to conceal some deformity, or as a shelter in winter, I am not fond of total plantations of ever-greens. Firs in particular form a very ungraceful summit, all broken into angles.

Sir Henry Englefield was one of the first improvers on the new style, and selected with singular taste that chief beauty of all gardens, prospect and fortunate points of view: we tire of

† At Woburn-farm in Surry.

all the painter's art when it wants these finishing touches. The fairest scenes, that depend on themselves alone, weary when often seen. The Doric portico, the Palladian bridge, the Gothic ruin, the Chinese pagoda, that surprise the stranger, soon lose their charms to their surfeited master. The lake that floats the valley is still more lifeless, and its Lord seldom enjoys his expence but when he shews it to a visitor. But the ornament whose merit soonest fades, is the hermitage or scene adapted to contemplation. It is almost comic to set aside a quarter of one's garden to be melancholy in. Prospect, animated prospect, is the theatre that will always be the most frequented. Prospects formerly were sacrificed to convenience and warmth. Thus Burleigh stands behind a hill, from the top of which it would command Stamford. Our ancestors, who resided the greatest part of the year at their seats, as others did two years together or more, had an eye to comfort first, before expence. Their vast mansions received and harboured all the younger branches, the dowagers and ancient maiden aunts of the families, and other families visited them for a month together. The method of living is now totally changed, and yet the same superb palaces are still created, becoming a pompous solitude to the owner, and a transient entertainment to a few travellers.

If any incident abolishes or restrains the modern style of gardening, it will be this circumstance of solitariness. The greater the scene, the more distant it is probably from the capital, in the neighbourhood of which land is too dear to admit considerable extent of property. Men tire of expence that is obvious to few spectators. Still there is a more imminent danger that threatens the present, as it has ever done all taste—I mean the pursuit of variety. A modern French writer has in a very affected phrase given a just account of this, I will call it, distemper. He says, *l'ennui du beau amene le gout du singulier*. The noble simplicity of the Augustan age was driven out by false taste. The gigantic, the puerile, the quaint, and at last the barbarous and the monkish, had each their successive admirers. Music has been improved, till it is a science of tricks and slight of hand: the sober greatness of Titian is lost, and painting since Carlo Maratti has little more relief than Indian paper. Borromini twisted and * curled architecture, as if it was subject to the change of fashions like a head of hair. If we once lose sight of the propriety of landscape in our gardens, we shall wander into all the fantastic Sharawadgis of the

* In particular, he inverted the volutes of the Ionic order.

Chinese. We have discovered the point of perfection. We have given the true model of gardening to the world: let other countries mimic or corrupt our taste; but let it reign here on its verdant throae, original by its elegant simplicity, and proud of no other art than that of softening Nature's harshnesses, and copying her graceful touch.

The ingenious author of the *Observations on Modern Gardening* is, I think, too rigid when he condemns some deceptions, because they have been often used. If those deceptions, as a feigned steeple of a distant church, or an unreal bridge to disguise the termination of water, were intended only to surprise, they were indeed tricks that would not bear repetition; but being intended to improve the landscape, are no more to be condemned because common, than they would be if employed by a painter in the composition of a picture. Ought one man's garden to be deprived of a happy object, because that object has been employed by another? The more we exact novelty, the sooner our taste will be vitiated. Situations are every where so various, that there never can be a sameness, while the disposition of the ground is studied and followed, and every incident of view turned to advantage.

In the mean time how rich, how gay, how picturesque the face of the country! The demolition of walls laying open each improvement, every journey is made through a succession of pictures; and even where taste is wanting in the spot improved, the general view is embellished by variety. If no relapse to barbarism, formality, and seclusion is made, what landscapes will dignify every quarter of our island, when the daily plantations that are making have attained venerable maturity! A specimen of what our gardens will be, may be seen at Petworth, where the portion of the park nearest the house has been allotted to the modern style. It is a garden of oaks two hundred years old. If there is a fault in so august a fragment of improved nature, it is, that the size of the trees are out of all proportion to the shrubs and accompanymnts. In truth, shrubs should not only be reserved for particular spots and home delight, but are passed their beauty in less than twenty years.

Enough has been done to establish such a school of landscape, as cannot be found on the rest of the globe. If we have the seeds of a Claud or a Gaspar amongst us, he must come forth. If wood, water, groves, vallies, glades, can inspire or poet or painter, this is the country, this is the age to produce them. The flocks, the herds, that now are admitted into, now graze on the borders of our cultivated plains, are ready before the painter's eyes, and groupe themselves to animate his picture.

GENERAL PRINCIPLES.

ARTS merely imitative have but one principle to work by, the *nature* or actual state of the thing to be imitated. In works of design and invention, another principle takes the lead, which is *taste*. And in every work in which mental gratification is not the only object, a third principle arises, *utility*, or the concomitant purpose for which the production is intended.

The art of *Gardening* is subject to these three principles: to nature, as being an imitative art; to utility, as being productive of objects which are useful as well as ornamental; and to taste, in the choice of fit objects to be imitated, and of fit purposes to be pursued, as also in the composition of the several objects and ends proposed, so as to produce the degree of gratification and use best suited to the *place* and to the *purpose* for which it is about to be ornamented: thus, a Hunting-Box and a Summer Villa,—an Ornamented Cottage and a Mansion, require a different *style* of ornament, a different *choice* of objects, a different *taste*. Nor can taste be confined to nature and utility,—the place and the purpose, alone; the object of the Polite Arts is the gratification of the human mind, and the state of refinement of the mind itself must be considered. Men's notions vary, not only in different ages, but individually in the same age: what would have gratified mankind a century ago in this country, will not please them now; whilst the country 'Squire and the Fine Gentleman of the

present day require a different kind of gratification: nevertheless, under these various circumstances, every thing may be *natural*, and every thing adapted to the *place*; the *degree of refinement* constituting the principal difference.

We do not mean to enter into any argument about whether a state of rusticity or a state of refinement, whether the forest or the city be the state for which the Author of Nature intended the human species: mankind are now found in every state, and in every stage of savageness, rusticity, civilization, and refinement; and the particular style of ornament we wish to recommend is, that which is best adapted to the state of refinement that now prevails in this country; leaving individuals to vary it as their own peculiar tastes may direct.

Before we proceed farther, it may be necessary to explain what it is we mean by *nature* and *natural*. If in the idea of *natural state* we include *ground*, *water*, and *wood*, no spot in this island can be said to be in a *state of nature*. The *ground*, or the surface of the earth as left by Nature (or the convulsions of Nature) remains, it is true, with but few alterations; yet even here (especially among rocks and steep acclivities, the noblest features in the face of Nature) we frequently find the hand of Art has been at work. Again, though rivers may still run in the channels, or nearly in the channels, into which Nature directed them; yet *waters* taken generally have been greatly controuled by human
art.

art. And with respect to *wood* we may venture to say, that there is not a tree, perhaps not a stick, now standing upon the face of the country which owes its identical state of existence to Nature alone. Wherever cultivation has set its foot,—wherever the plow and spade have laid fallow the soil,—Nature is become extinct; and it is in neglected or less cultivated places, in mosses and mountains, in forests and parochial wastes, we are to seek for any thing *near* a state of Nature—we mean in this country: and who would look for the standard of taste, who expect to find the lovely mixture of wood and lawn so delightful to the human-eye, in the endless woods and the impenetrable roughnesses of America? We may therefore conclude, that the objects of our imitation are not to be sought for in uncultivated Nature. The inhospitable heaths of Westmoreland may astonish for the moment, may be the pleasing amusement of a summer's day, and agreeable objects in their places; but are they *objects of imitation* under the window of a drawing-room? Rather let us turn our eyes to well-soiled, well-wooded, well-cultivated spots, where Nature and Art are happily blended; leaving those who are admirers of Art merely imitative to contemplate Nature upon canvas; and those who wish for Nature in a state of total neglect, to take up their residence in the woods of America.

Far be it from us to rebel against the laws of Nature, or to question in any wise the perfection of the Deity. A state of nature, in the eye of Omniscience, is undoubtedly a state of perfection. But
in

in the littleness of human conception, something is wanted to bring down natural objects to the level of our comprehension. What object in nature is in a state of *human perfection*? Even in the finest woman a female critic will discover *faults*: and in the handsomest horse a buyer will point out what in the human eye appear as *imperfections*. Did ever a landscape painter find a scene, purely natural, which might not have been improved by the hand of Art, or which he did not actually improve by a stroke of his pencil? A striking feature may sometimes be caught where little addition is wanted; but in a rich picturesque view, which will bear to be placed repeatedly under the eye, a portion of *lawn* is requisite*, and in the wilds of nature we know of no such thing.

Therefore our idea of *natural* is not confined to *neglected* nature, but extends to *cultivated* nature—to

* Mr. GRAY, whose letters to Dr. WARTON, describing the natural scenery of the North of England, have been held out as models of their kind, corroborates our idea.

“ Just beyond this opens one of the sweetest landscapes that art ever attempted to imitate. The bosom of the mountain spreading here into a broad basin, discovers in the midst Grassmere Water: its margin is hollowed into small bays, with bold eminences, some of rock, some of *soft turf*, that half conceal and vary the figure of the little lake they command: from the shore a low promontory pushes itself far into the water, and on it stands a white village with the parish-church rising in the midst of it: hanging inclosures, corn-fields, and *meadows green as emerald*, with their trees, and hedges, and cattle, fill up the whole space from the edge of the water: and just opposite to you is a large farm-house at the bottom of a steep *smooth lawn*, embosomed in old woods which climb half way up the mountain-side, and discover above them a broken line of crags that crown the scene.

to nature *touched* by art, and rendered intelligible to human perception : and we venture to recommend, as objects most worthy the study and imitation of the artists, such *passages in nature* as give the highest degree of gratification to cultivated minds in general : passages like the following—no matter whether produced by *accident* or *design*—no matter whether it occur in a forest or a park—~~or whether~~ it occupy the corner of a common, or fill up a conspicuous quarter of an ornamental ground :—a lofty wood hanging on a bold ascent ; its broken margin flowing negligently over the bosom of the valley, lying broad and bare beneath, and falling gently to the brink of a river, winding gracefully along the bottom.—We further beg leave to add in this place, that if a passage like this—especially if the lawn be spread with cattle, and the whole scene enlivened by the presence of the sun, and animated by the fleeting shadows of the clouds sweeping its varied surface—is incapable of conveying a degree of gratification to the mind of any of our Readers, we have no hope of entertaining such a mind in this part of our performance.

scene. Not a single red tile, no flaming Gentleman's house, or garden-walls, break in upon the repose of this little unsuspected paradise ; but all is peace, rusticity, and happy poverty in its purest, most becoming attire."

Gray's Letters to Dr. Warton, p. 181.

S I T E.

BY *the Site* we mean, not only the *place* itself, but likewise so much of the *surrounding country* as falls within the view.

If the place be already suited to the surrounding country, and to the particular purpose for which it is intended, the assistance of art is not wanted, the business of the Gardener is precluded. If the Site be *nearly* in this state, the *touchings* of art are only required. But if the place be greatly deficient, as places in general are, then it is the duty of the artist "to supply its defects, to correct its faults, and to improve its beauties."

Every PLACE consists either of *ground* alone, or of *ground* and *water*, or of *ground* and *wood*, or of *ground*, *water*, and *wood*,

 G R O U N D.

BY Ground is meant that portion of naked surface, which is included within the place to be improved; whether that surface be *swamp*, *lawn*, *roughet*, *broken-ground*, or *rock*; and whether it be a *hill*, a *valley*, a *plain*, or a composition of *swells*, *dips*, and *levels*.

Mr. GILPIN, in his excellent *Observations on the Wye, &c.* (page 62) gives us a sublime idea of what ground ought to be.—"Nothing, says he, gives

gives so just an idea of the beautiful swellings of ground, as those of water, where it has sufficient room to undulate and expand. In ground which is composed of very refractory materials, you are presented often with harsh lines, angular insertions, and disagreeable abruptnesses. In water, whether in gentle or in agitated motion, all is easy, all is softened into itself; and the hills and the vallies play into each other, in a variety of the most beautiful forms. In agitated water, abruptnesses indeed there are, but yet they are such abruptnesses as, in some part or other, unite properly with the surface around them; and are on the whole peculiarly harmonious. Now, if the ocean in any of these swellings and agitations could be arrested and fixed, it would produce that pleasing variety which we admire in ground. Hence it is common to fetch our images from water, and apply them to land: we talk of an undulating line, a playing lawn, and a billowy surface; and give a much stronger and more adequate idea by such imagery, than plain language could possibly present."

The exertions of art, however, are here inadequate and the artist ought not to attempt to create a *mountain*, a *valley*, or a *plain*; and should but rarely meddle even with the smaller inequalities of grounds. The *rock* stands equally above the reach of human art, and to attempt to make or unmake it is absurd. *Roughets* and *broken-ground* may generally be reduced to lawn, or hid with wood; and
a swamp

a *swamp* may be drained, or covered with water; whilst *lawn* may be variegated at pleasure by wood, and sometimes by water.

W A T E R.

THIS is either *sea*, *lake*, *pool*, *river*, *rivulet*, or *rill*.

A broad *lake* and a copious *river* are too great for human art to cope with : nevertheless, the margin and the bank may be ornamented, and the surface of the water disclosed to advantage. *Rivulets* are often in themselves delightful, and, where broad waters are wanted, may be turned to great advantage by art. * Stowe affords a proof of what may be accomplished even with a *rill*. If the base of the valley be broad, a lake may be made ; if narrow, a river.

In countries where natural waters abound, art may improve, but should not attempt to create : but in places naturally dry, the artist may frequently call forth the creative powers with success. In any situation, however, art must miscarry, if Nature has not furnished a sufficient supply of materials : *stagnant pools* are always disgusting : *stews*, indeed, may often be necessary ; but, like the kitchen-garden, they ought not to be *seen*.

* The seat of Lord Temple, near Buckingham.

W O O D.

W O O D.

OVER this element of the rural art the power of the artist is absolute ; he can increase or diminish at pleasure : if the place be over-wooded, he can lighten it with lawn, or with water : if too naked, he can supply the deficiency by PLANTING.

In forming ORNAMENTAL PLANTATIONS, two things are to be considered, the *species of plantation*, and the *species of tree*.

The different species of plantation are the *Wood*, the *Grove*, the *Coppice* or *Thicket*, the *Shrubbery-Quarter*, the *Border*, the *Clump*, the *Group*, and the *Single-Tree*.

Woods, Groves, and extensive Thickets, are more particularly adapted to the sides of hills and elevated situations : the larger Clumps, Groups and Single-Trees, to the lower grounds. A naked hill gives an idea of bleakness ; as a valley filled with wood does that of dankness. The Shrubbery depends more upon artificial accompaniments than natural situation.

Much depends upon the disposition of the several distinct woodinesses (whether accidental or designed) with respect to each other ; and much also upon the respective outlines, particularly those of the larger kind. The Atmosphere and the Earth are equally bountiful in affording the rural artist fit subjects for study. The margins of seas and lakes give us, in their bays and promontories, an ample choice

choice of outline; whilst the blue expanse scattered with summer's clouds, discovers infinite variety both of figure and disposition.

In the choice of trees four things are observable: the *height*, the *form*, the *colour*, and the *use*. This is more essential to a good choice than may appear at first sight: nothing heightens the idea of ornament, especially in the eye of the owner, more than utility; nor on the contrary does any thing flatten it, or throw a damp upon the gratification, more than the worthlessness of the object before us. Immediately under the eye, the gaudy Shrub, and the ornamental though useless Exotic, may be admitted; but for more distant objects, and in less embellished situations, the Timber-tree ought to prevail. We should endeavour to make such a choice as will gratify the present age and benefit the future.

In mixing trees there is, in respect of *height*, a general rule: the tallest should be made to occupy the central parts, descending gradually to the margin: but with respect to *colour* all precepts would be vague; the tints ought to be as wild and various as the evening sky tinged by the setting sun.

NATURAL ACCOMPANIMENTS.

THE most judicious admixture of wood and lawn appears flat and unmeaning, unless it be enlivened

livened by animated nature. What sprightliness and elegance are added to the plain, in the playful attitudes and racings of the horse; — and how much additional grandeur the vale receives in the scattered herd ! — How strikingly beautiful the bosom of a hill enlivened by the pasturing flock; and how peculiarly delightful the sequestered lawn, while the hare is present ! Even the squirrel gives a chearfulness to the grove; whilst the plummy tribes disperse an agreeable animation through the whole scene.

FACTITIOUS ACCOMPANIMENTS.

UNDER this head we arrange *Fences, Walks, Roads, Bridges, Seats, and Buildings.*

THE FENCE, where the place is large, becomes necessary; yet the eye dislikes constraint. Our ideas of liberty carry us beyond our own species: the imagination feels a dislike in seeing even the brute creation in a state of confinement. The birds wafting themselves from wood to grove are objects of delight; and the hare appears to enjoy a degree of happiness unknown to the barriered flock. Besides, a tall fence frequently hides from the sight objects the most pleasing; not only the flocks and herds themselves, but the surface they graze upon. These considerations have brought the *unseen fence* into general use.

This species of barrier it must be allowed incurs a degree of deception, which can scarcely be warranted upon any other occasion. In this instance, however, it is a species of fraud which we observe

in nature's practice: how often have we seen two distinct herds feeding, to appearance, in the same extended meadow; until coming abruptly upon a deep-sunk rivulet, or an unfordable river, we discover the deception.

Besides the *sunk* fence, another sort of unseen barrier may be made, though by no means equal to *that*; especially if near the eye. This is constructed of paling, painted of the *invisible green*. If the colour of the back-ground were permanent, and that of the paint made exactly to correspond with it, the deception would, at a distance, be complete; but back-grounds, in general, changing with the season, this kind of fence is the less eligible.

Clumps and patches of woodiness scattered promiscuously on either side of an unseen winding fence, assist very much in doing away the idea of constraint. For by this means

The wand'ring flocks that brouse between the shades,
Seem oft to pass their bounds, the dubious eye
Decides not if they crop the mead or lawn.

MASON.

The WALK, in extensive grounds, is as necessary as the Fence. The beauties of the place are disclosed that they may be seen; and it is the office of the walk to lead the eye from view to view; in order that, whilst the tone of health is preserved by the favourite exercise of nature, the mind may be thrown into unison by the harmony of the surrounding objects.

The

The direction of the walk must be guided by the points of view to which it leads, and the nature of the ground it passes over : it ought to be made subservient to the natural impediments — the Ground, Wood, and Water — which fall in its way, without appearing to have any direction of its own. It can seldom run, with propriety, any distance in a strait line ; a thing which rarely occurs in a *natural walk*. The paths of the Negroes, and the Indians, are always crooked ; and those of the brute creation are very similar. Mr. Mason's description of this *Path of Nature* is happily conceived.

The peasant driving through each shadowy lane
 His team, that bends beneath th' incumbent weight
 Of laughing CERES, marks it with his wheel ;
 At night and morn, the milk-maid's careless step
 Has, thro' yon pasture green, from stile to stile
 Imprest a kindred curve ; the scudding hare
 Draws to her dew-scented seat, o'er thymy heaths,
 A path as gently waving. ————— *Eng. Gard. v. 60.*

THE ROAD may be a thing of necessity, as an *approach* to the mansion, or a matter of amusement only, as a *drive* or a *ride*, from which the grounds, and the surrounding country, may be seen to advantage. It should be the study of the artist to make the same road answer, as far as may be, the two-fold purpose.

The Road and the Walk are subject to the same rule of *Nature* and *Use*. The direction ought to be natural and easy, and adapted to the purpose intended. A Road of necessity ought to be straighter

than one of mere conveniency : in this, recreation is the predominant idea ; in that, utility. But, even in this, the direct line may be dispensed with. The natural roads upon heaths and open downs, and the grassy glades and green roads across forests and extensive wastes, are proper subjects to be studied.

THE BRIDGE should never be seen where it is not wanted : a useless bridge is a deception ; deceptions are frauds ; and fraud is always hateful ; unless when practised to avert some greater evil. A bridge without water is an absurdity ; and half an one stuck up as an eye-trap is a paltry trick, which, though it may strike the stranger, cannot fail of disgusting when the fraud is found out.

In low situations, and wherever water abounds, bridges become *useful*, and are therefore *pleasing objects* : they are looked for, and ought to appear, not as objects of ornament only, but likewise as matters of utility. The walk or the road, therefore, ought to be directed in such a manner as to cross the water at the point in which the bridge will appear to the greatest advantage.

In the construction of bridges, also, regard must be had to ornament and utility. A bridge is an artificial production, and as such it ought to appear. It ranks among the noblest of human inventions : the ship and the fortress alone excel it. Simplicity and firmness are the leading principles in its construction. Mr. Wheatley's observation is just when he says, " The single wooden arch, now much in fashion, seems to me generally misapplied. Elevated
without

without occasion so much above, it is totally detached from the river; it is often seen straddling in the air, without a glimpse of water to account for it; and the ostentation of it as an ornamental object, diverts all that train of ideas, which its use, as a communication, might suggest." (*Obs. on Mod. Gard.* 73.) But we beg leave to differ from this ingenious Writer when he tells us, - that it is "spoiled, if adorned; it is disfigured, if only painted of any other than a dusky colour." In a rustic scene, where Nature wears her own coarse garb, "the vulgar foot-bridge of planks only, guarded on one hand by a common rail, and supported by a few ordinary piles," may be in character; but amidst a display of ornamented Nature, a contrivance of that kind would appear mean and pallery; and would be an affectation of simplicity, rather than the lovely attribute itself. In cultivated scenes, the bridge ought to receive the ornaments which the laws of architectural taste allow; and the more polished the situation, the higher should be the style and finishings.

SEATS have a two-fold use; they are useful as places of rest and conversation, and as guides to the *points of view*, in which the beauties of the surrounding scene are disclosed. Every point of view should be marked with a seat, and, speaking generally, no seat ought to appear but in some favourable point of view. This rule may not be invariable, but is ought seldom to be deviated from.

In the ruder scenes of neglected Nature, the simple trunk, rough from the woodman's hands, and the butts or stools of rooted trees, without any other marks of tools upon them than those of the saw which severed them from their stems, are seats in character; and in romantic or recluse situations, the cave or the grotto are admissible. But wherever human design has been executed upon the natural objects of the place, the seat and every other artificial accompaniment ought to be in unison; and, whether the bench or the alcove be chosen, it ought to be formed and finished in such a manner as to unite with the wood, the lawn, and the walk, which lie round it.

The colour of seats should likewise be suited to situations: where uncultivated Nature prevails, the natural brown of the wood itself ought not to be altered: but where the rural art presides, white, or stone-colour, has a much better effect.

BUILDINGS may be admitted into ornamented Nature; provided they be at once useful and ornamental. Mere ornament without use, and mere use without ornament, are equally inadmissible. Nor should their uses be disguised; a barn dressed up in the habit of a country church, or a farmhouse figuring away in the fierceness of a castle, are ridiculous deceptions. A landscape daubed upon a board, and a wooden steeple stuck up in a wood, are beneath censure.

There is another species of useless ornament still more offensive, because more costly, than those comparatively

paratively innocent eye-traps ; we mean Temples *. Whether they be dedicated to Bacchus, Venus, Priapus, or any other demon of debauchery, they are, in this age, enlightened with regard to theological and scientific knowledge, equally absurd.

We are far, however, from wishing to exclude architecture from ornamented Nature. We wish to see it exercised in all its beauty and sublimity upon a chapel †, a mausoleum ‡, a monument ||,—scattered judiciously among the natural ornaments : not too open or conspicuous, to give them the air of principals ; nor too recluse, to lose their full effect as subordinate parts of the one great whole.

* Notwithstanding thousands, or tens of thousands, have, in one instance, been sacrificed to Vanity and false Wit (O ! Temple ! “ how delightful are thy Temples ! ”), we flatter ourselves that as few men’s names can apologize for committing so great an act of folly, the example will not be copied.

† The late Sir William Harbord, whose taste and judgement, upon every occasion, discovered a goodness of heart and a greatness of character, has given us a model of this kind, at Gunton, in Norfolk. The parish-church standing in his park, and being an old unsightly building, he had it taken down, and a *beautiful temple*, under the direction of the Adams’, erected upon its site.

‡ The mausoleum at Castle-Howard, in Yorkshire, the seat of the Earl of Carlisle, is a noble building.

|| The *temple* of Concord and Victory at Stowe, erected to the memory of the great Lord Chatham and *his* glorious war, is a beautiful *monumental* building, suited to the greatness of the occasion.

In scenes less ornamented, buildings of an economical nature may appear with good effect. Sir George Warren, at his seat near Fetcham in Surrey, has turned a *temple* into a wind-mill with great success. What was before a useless, *lifeless* fabrick, now stands an emblem of activity and industry. Under the heads of large artificial lakes, water-mills may generally be erected, and with good effect. A mill is not only a striking instance of the power of the human invention, but is frequently a great relief to the poor in its neighbourhood. Substantial farm-houses, and neat comfortable cottages, scattered at a proper distance, are always pleasing objects. The banquetting-house and the porter's lodge, being more susceptible of ornament, may be permitted nearer the eye.

GENERAL APPLICATION.

HAVING thus enumerated the elements, and set forth the leading principles, we now proceed to the execution.

We beg leave to preface this part of our performance with apprizing our Readers, that all that can be written upon this delightful art must be more or less general. — All that *science* can do is to give a *comprehensive view of the subject*; and all that

that *precept* should attempt, is to lay down *general rules* of practice. The nature of the place itself--- and the purpose for which it is about to be improved, must ever determine the particular application. It follows, that a gentleman who, from long residence, is fully acquainted with the former, and whose will is a rule to the latter, is the properest person to improve his own place; — provided he be intimately acquainted with the *Art* — as well as with the *place* and the *purpose*: the three are equally and essentially necessary to be understood. It would be as great an impropriety in a gentleman to set about the execution of a work of this nature upon a large scale, before he had acquired a comprehensive knowledge of the subject, studied its leading principle from Nature, made ample observation upon places already ornamented, and had established his theory by some actual practice, at least upon a small scale;—as it would be in a professional artist to hazard his own reputation, and risque the property of his employer, before he had studied maturely the nature of the place, and been made fully sensible of the intentions of its owner.

The nature and style of improvement, — *the purpose*, — depends entirely upon the intention and taste of the proprietor, and is consequently as various as the nature of places themselves: nevertheless, improvements in general may be classed under the following heads;

The

The Hunting-Box, The Villa, and
The Ornamented Cottage, The Principal Refi-
dence.

But, before we enter upon the detail, it will be proper to make some general observations.

It is unnecessary to repeat, that wherever Nature or accident has already adapted the place to the intended purpose, the assistance of Art is precluded : but wherever Nature is improveable, Art has an undoubted right to step in, and make the requisite improvement. The diamond, in its natural state, is highly improveable by art.

In the lower classes of rural improvements, Art should be seen as little as may be ; and in the more negligent scenes of Nature, every thing ought to appear as if it had been done by the general laws of Nature, or had grown out of a series of fortuitous circumstances. But, in the higher departments, Art cannot be hid ; and the *appearance* of design ought not to be excluded. A human production cannot be made perfectly natural ; and, held out as such, it becomes an imposition. Our art lies in endeavouring to adapt the productions of Nature to human taste and perceptions ; and, if much art be used, do not *attempt* to hide it. Who considers an accomplished well-dressed woman as in a state of Nature ? and who, seeing a beautiful ground adorned with wood and lawn, with water, bridges, and buildings, believes it to be a natural production ? Art
feldom

seldom fails to please when executed in a masterly manner: nay, it is frequently the design and execution, more than the production itself, that strikes us. It is the *artifice*, not the *design*, which ought to be avoided. It is the *labour*, and not the *art*, which ought to be concealed. A well-written poem would be read with less pleasure, if we *knew* the painful exertions it gave rise to in the composition; and the rural artist ought, upon every occasion, to endeavour to avoid labour; or, if indispensibly necessary, to conceal it. No trace should be left to lead back the mind to the *expensive toil*. A mound raised, a mountain levelled, or a useless temple built, convey to the mind feelings equally disgusting.

But though the aids of Art are as essential to gardening, as education is to manners; yet Art may do too much: she ought to be considered as the handmaid, not as the mistress, of Nature: and whether she be employed in carving a tree into the figure of an animal, or in shaping a view into the form of a *picture*, she is equally culpable. The nature of the place is sacred. Should this tend to *landscape*, from some principal point of view, assist Nature, and perfect it; provided this can be done without injuring the views from other points. But do not disfigure the natural features of the place:—do not sacrifice its native beauties, to the arbitrary laws of landscape painting.

Great Nature scorns controul ; she will not bear
 One beauty foreign to the spot or soil
 She gives thee to adorn : 'Tis thine alone
 To mend, not change her features.

MASON,

In a picture bounded by its frame, a perfect landscape is looked for : it is of itself a *whole*, and *the frame must be filled*. But it is not so in ornamented Nature : for, if a side-screen be wanting, the eye is not offended with the frame, or the wainscot ; but has always some natural and pleasing object to receive it. Suppose a room to be hung with one continued rural representation, — would *pretty pictures* be expected ? would correct landscapes be looked for ? Nature scarcely knows the thing mankind call a *landscape*. The landscape-painter seldom, if ever, finds it perfected to his hands ; — some addition or alteration is almost always wanted. Every man who has made his observations upon natural scenery, knows that the Mistletoe of the Oak occurs almost as often as a perfect natural landscape ; and to attempt to make up artificial landscape, upon every occasion, is unnatural and absurd.

It is far from our intention to intimate any thing the least disrespectful to *landscape painting* : let the ingenious artist cull from Nature her choicest beauties, and let him associate them in the manner best suited to his own single and permanent point of view : but do not let us carry his production back again to Nature, and contract her unbounded beauties within the limits of a picture-frame. If, indeed,
 the

the eye were fixed in one point, the trees could be raised to their full height at command, and the sun be made to stand still,—the rural artist might work by the rules of *light and shade*, and compose his landscape by the painter's law. But, whilst the sun continues to pour forth its light impartially, and the trees to rise with slow progression, it would be ridiculous to attempt it. Let him rather seek out, imitate, and associate, such **STRIKING PASSAGES IN NATURE** as are immediately applicable to the place to be improved, without regard to rules of landscape, merely human;—and let him,

————— in this and all
Be various, wild, and free, as Nature's self." MASON.

Instead of sacrificing the natural beauties of the place to one formal landscape, let every step disclose fresh charms unsought-for. How strikingly beautiful the changes formed by the islands, and their respective mountains, in sailing through the West-Indies! The eye does not catch the same view twice: the scene is ever changing,—ever beautiful.

We should not have offered our sentiments so freely upon landscape, had not a French writer of some eminence*, in a work lately published, laid

* The Marquis D'Ermenonville, friend of the celebrated Rousseau, who died at his house, and whose remains were deposited in his grounds, at Ermenonville.

it down as an invariable rule, that all ornamental grounds should have a complete landscape, to be seen from some part of the house; and to be made from a perspective drawing, previously taken from the window of the saloon, or the top of the mansion. The work, in other respects, has, nevertheless, great merit, and is in fact an ingenious *Essay on English Gardening*. The Frenchman's vanity, however, will not suffer him to make this acknowledgement: no, it is neither Antients, nor Moderns, nor English, nor Chinese; and there is some reason to suspect, that the Marquis holds out landscape for no other purpose, than to endeavour to give his work the air of originality; for, in other respects, it contains, in effect, what Wheatley and Mason, Kent and Brown, have previously taught and practised.

Notwithstanding, however, the nature of the place ought not to be sacrificed to the mansion; — the house must ever be allowed to be a principal in the composition. It ought to be considered as the center of the system; and the rays of art, like those of the sun, should grow fainter as they recede from the center. The house itself being entirely a work of art, its immediate environs should be highly finished; but as the distance increases, the appearance of design should gradually diminish, until Nature and fortuitousness have full possession of the scene.

In general, the approach should be to the back-front, which, in suitable situations, ought to lie
open

open to the pasture-grounds. On the sides more highly ornamented, a well-kept gravel-walk may embrace the walls; to this the shaven lawn and shrubbery succeed; next, the grounds closely pastured; and, lastly, the surrounding country, which ought not to be considered as out of the artist's reach: for his art consists not more in decorating particular spots, than in endeavouring to render the whole face of Nature delightful.

Another reason for this mode of arrangement is, objects immediately under the eye are seen more distinctly than those at a distance, and ought to be such as are pleasing in the detail. The beauties of a flower can be discerned on a near view only; whilst, at a distance, a roughet of coppice-wood, and the most elegant arrangement of flowering shrubs, have the same effect. The most rational entertainment the human mind is capable of receiving, is that of observing the operations of Nature. The foliation of a leaf, the blowing of flowers, and the maturation of fruit, are among the most delightful subjects that a contemplative mind can be employed in. These processes of Nature are slow, and except the object fall spontaneously under the eye of the observer, the inconveniencies of visiting it in a remote part, so far interfere with the more important employments of life, as to blunt, if not destroy, the enjoyment. This is a strong argument in favour of shrubs and flowers being planted under or near our windows, especially those from
whence

whence they may be viewed during the hours of leisure and tranquillity.

Further, the vegetable creation being subject to the animal, the shrub may be cropt, or the flower trodden down, in its day of beauty. If, therefore, we wish to converse with Nature in private; intruders must be kept off, — the shrubbery be severed from the ground;— yet not in such a manner as to drive away the pasturing stock from our sight. For this reason, the shaven lawn ought not to be too extensive, and the fence which incloses it should be such as will not interrupt the view: But whether it be *seen* or *unseen*, *suspected* or *unsuspected*, is a matter of no great import: its utility in protecting the shrubs and flowers,—in keeping the horns of the cattle from the window, and the feet of the sheep from the gravel and broken ground,—in preserving that neatness on the outside, which ought to correspond with the finishings and furniture within,—render it of sufficient importance to become even a part of the ornament.

Before any step can be taken towards the execution of the design, be it large or small, a map or plan of the place, exactly as it lies in its unimproved state, should be made; with a corresponding sketch, to mark the intended improvements upon. Not a hovel nor a twig should be touched, until the artist has studied maturely the natural abilities of the place, and has decidedly fixed in his mind, and finally settled on his plan, the proposed alterations :

ations: and even then, let him “dare with caution.”

There is a striking similarity between a neglected scene in Nature, and a neglected cottage-beauty; and the mode of improvement is, in either instance, similar. If the face unwashed, and uncombed hair, be considered as ornamental,—Art is not wanted. If rustic bloom and native simplicity be deemed more desirable,—wash the face, and comb the hair in flowing ringlets, and such ornament will be had in its highest perfection. If that elegance of carriage, and gracefulness of deportment, which flow from education and a refined understanding, be thought requisite, Art may be employed in giving this grace and elegance; for thus far she may go with propriety. But, if she attempt to go farther, if she presume to *cut and carve*, or disguise the native beautifulness of features with *paint and patches*, or to hide the loveliness of form with *fantastic or formal dresses*,—she does too much.

It would be needless to add, that Art may be employed in concealing, or in doing away the deformities of Nature. But, even in this, she ought to be cautiously circumspect: for, throughout, there is more danger of doing too much than too little; and nothing should ever be attempted which cannot be performed in a masterly manner.

H U N T I N G - B O X.

HERE Art has little to do. Hunting may be called the amusement of Nature; and the place appropriated to it ought to be no farther altered from its natural state than decency and convenience require:---With men who live in the present age of refinement, "a want of decency is a want of sense."

The style throughout should be *masculine*. If shrubs be required, they should be of the hardier sorts; the Box, the Holly, the Laurustinus. The trees should be the Oak and the Beech, which give in Autumn an agreeable variety of foliage, and anticipate, as it were, the season of diversion. A suite of paddocks should be seen from the house; and if a view of distant covers can be caught, the background will be complete. The stable, the kennel, and the leaping-bar, are the factitious accompaniments; in the construction of which simplicity, substantialness, and convenience, should prevail.

O R N A M E N T E D C O T T A G E.

NEATNESS and simplicity ought to mark the style of this rational retreat. Ostentation and show should be cautiously avoided; even elegance should not be *attempted*; though it may not be *hid*, if it offer itself spontaneously.

Nothing,

Nothing, however, should appear vulgar, nor should simplicity be pared down to baldness; every thing whimsical or expensive ought to be studiously avoided;—chaateness and frugality should appear in every part.

Near the house a *studied neatness* may take place; but, at a distance, *negligence* should rather be the characteristic.

If a taste for botany lead to a collection of native shrubs and flowers, a shrubbery will be requisite; but, in this, every thing should be native. A gaudy exotic ought not to be admitted; nor should the lawn be kept close shaven; its flowers should be permitted to blow; and the herbage, when mown, ought to be carried off, and applied to some useful purpose.

In the artificial accompaniments, ornament must be subordinate; utility must preside. The buildings, if any appear, should be those in actual use in rural economics. If the hovel be wanted, let it appear; and, as a side-screen, the barn and rick-yard are admissible; whilst the dove-house and poultry-yard may enter more freely into the composition.

In fine, the ORNAMENTED COTTAGE ought to exhibit cultivated Nature in the first stage of refinement. It ranks next above the farm-house. The plain garb of rusticity may be set off to advantage; but the studied dress of the artist ought not to appear. That becoming neatness, and those domestic conveniencies, which render the rural life agreeable to a cultivated mind, are all that should be aimed at.

T H E V I L L A.

HERE, a style very different from the preceding ought to prevail: It ought to be *elegant, rich, or grand*, according to the style of the house itself, and the state of the surrounding country; the principal business of the artist being to connect these two in such a manner, that the one shall not appear naked or glaring, nor the other desolate and inhospitable.

If the house be stately, and the adjacent country rich and highly cultivated, a shrubbery may intervene, in which Art may shew her utmost skill. Here, the artist may even be permitted to *play at landscape*: for a place of this kind being supposed to be small, the purpose principally ornamental, and the point of view probably confined simply to the house, side-screens may be formed, and a foreground laid out suitable to the best distance that can be caught.

If buildings or other artificial ornaments abound in the offscap, so as to mark it strongly, they ought also to appear more or less in the fore-ground: if the distance abound with wood, the fore-ground should be thickened, lest baldness should offend; if open and naked, elegance rather than richness ought to be studied, lest heaviness should appear.

It is far from being any part of our plan to cavil unnecessarily at artists, whether living or dead; we cannot, however, refrain from expressing a concern for the almost total neglect of the principles
here

here laid down, in the prevailing practice of a late celebrated artist, in ornamenting the vicinages of villas. We mention it the rather, as Mr. Brown seems to have *set the fashion*, and we are sorry to find it copied by the inferior artists of the day. Without any regard to uniting the house with the adjacent country, and, indeed, seemingly without any regard whatever to the offscape, one invariable plan of embellishment prevails; namely, that of stripping the fore-ground entirely naked, or nearly so, and surrounding it with a wavy border of shrubs and a gravel walk; leaving the area, whether large or small, one naked sheet of greenward.

In small confined spots, this plan may be eligible. We dislike those bolstered flower-beds which abound in the suburbs of the metropolis, where the broken-ground sometimes exceeds the lawn; nevertheless, to our apprehension, a simple border round a large unbroken lawn only serves to shew what more is wanted. Simplicity in general is pleasing; but even simplicity may be carried to an extreme, so as to convey no other idea than that of poverty and baldness. Besides, how often do we see in natural scenery, the holly and the fox-glove flourishing at the foot of an oak, and the primrose and the campion adding charms to the hawthorn scattered over the pastured lawn? And we conceive that single trees footed with evergreens and native flowers, and clumps as well as borders of shrubs, are admissible in *ornamental* as well as in *natural* scenery.

The species of shrub will vary with the purpose. If the principal intention be a winter retreat, ever-greens and the early-blowing shrubs should predominate; but in a place to be frequented in summer and autumn, the deciduous tribes ought chiefly to be planted.

P R I N C I P A L R E S I D E N C E.

HERE the whole art centers. The artist has here full scope for a display of taste and genius. He has an extent of country under his eye, and will endeavour to make the most of what nature and accident have spread before him.

Round a Principal Residence, a gentleman may be supposed to have some considerable estate, and it is not a shrubbery and a ground only, which fall under the consideration of the artist: he ought to endeavour to disclose to the view, either from the house or some other point, as much as he conveniently can of the adjacent estate. The love of possession is deeply planted in every man's breast; and places should bow to the gratification of their owners. To curtail the view by an artificial side-screen, or any other unnatural machinery, so as to deprive a man of the satisfaction of over-looking his own estate, is an absurdity which no artist ought to be permitted to be guilty of. It is very different, however, where the property of another intrudes

trudes upon the eye: Here the view may, with some colour of propriety, be bounded by a woody screen.

After what has been said under the head GENERAL APPLICATION, little remains to be added here. Indeed, it would be in vain to attempt to lay down particular rules: different places are marked by sets of features as different from each other as are those in men's faces. Much must be left to the skill and taste of the artist; and let those be what they may, nothing but mature study of the natural abilities of the particular place to be improved, can render him equal to the execution, so as to make the most of the materials that are placed before him.

Some few general rules may nevertheless be laid down. The approach ought to be conducted in such a manner, that the striking features of the place shall burst upon the view at once: no trick however should be made use of: all should appear to fall in naturally. In leading towards the house its direction should not be fully in front, nor exactly at an angle, but should pass obliquely upon the house and its accompaniments; so that their position with respect to each other, as well as the perspective appearance of the house itself, may vary at every step: and, having shewn the front and the principal wing, or other accompaniment, to advantage, the approach should wind to the back-front, which,

as has been already observed, ought to lie open to the park or pastured grounds.

The improvements and the rooms from which they are to be seen should be in *unison*. Thus, the view from the drawing-room should be highly embellished, to correspond with the beauty and elegance within : every thing here should be *feminine*—elegant—beautiful—such as attunes the mind to politeness and lively conversation. The breakfasting-room should have more masculine objects in view : wood, water, and an extended country for the eye to roam over ; such as allures us imperceptibly to the ride or the chace. The eating and banquetting rooms need no *exterior* allurements.

There is a harmony in taste as in music : variety, and even wildness upon some occasions, may be admitted ; but discord cannot be allowed. If, therefore, a place be so circumstanced as to consist of properties totally irreconcilable, the parts ought, if possible, to be separated in such a manner, that, like the air and the recitative, the adagio and the allegro, in music, they may set off each other's charms by the contrast. We will endeavour to illustrate our meaning, and close our present performance, with a description and proposed improvement of *Persfield*, the seat of Mr. MORRIS, near Chepstow in Monmouthshire ; a place upon which Nature has been peculiarly lavish of her favours ; and which has been spoken of by Mr. WHEATLEY, Mr. GILPIN,

GILPIN, and other writers in the most flattering terms.

Persfield is situated upon the banks of the river Wye, which divides Gloucestershire and Monmouthshire, and which was formerly the boundary between England and Wales. The general tendency of the river is from north to south; but about Persfield it describes by its winding course the letter S, somewhat compressed, so as to reduce it in length and increase its width. The grounds of Persfield are lifted high above the bed of the river, shelving, and form the brink of a lofty and steep precipice, towards the south-west.

The lower limb of the letter is filled with *Perse-wood*, which makes a part of Persfield; but is at present an impenetrable thicket of coppice-wood. This dips to the south-east down to the water's edge; and, seen from the top of the opposite rock, has a good effect.

The upper limb receives the farms of *Llan-cot*: rich and highly cultivated: broken into inclosures, and scattered with groups and single trees: two well-looking farm-houses in the center, and a neat white chapel on one side: altogether a lovely little paradisaical spot. The lowliness of its situation stamps it with an air of meekness and humility; and the natural barriers which surround it adds that of peacefulness and security. These picturesque farms do not form a low flat bottom, subject to be overflowed by the river; but take the form of a gorger, rising fullest in the middle, and fall-

falling on every side gently to the brink of the Wye; except on the east-side, where the top of the gorge leans in an easy manner against a range of perpendicular rock; as if to shew its disk with advantage to the walks of Persefield.

This rock stretches across what may be called the Isthmus, leaving only a narrow pass down into the fields of Llancot, and joins the principal range of rocks at the lower bend of the river.

To the north, at the head of the letter, stands an immense rock (or rather a pile of immense rocks heaped one above another) called Windcliff; the top of which is elevated as much above the grounds of Persefield as those are above the fields of Llancot.

These several rocks, with the wooded precipices on the side of Persefield, form a circular inclosure, about a mile in diameter, including Persewood, Llancot, the Wye, and a small meadow lying at the foot of Windcliff.

The grounds are divided into the upper and lower lawn*, by the approach to the house: a small irregular building; standing near the brink of the precipice; but facing down the lower lawn: a

* Mr. Wheatley says, the park contains about three hundred acres: but we think the two *lawns* cannot contain so much; and if the hanging-wood at the bottom of the lower lawn, with the face of the Precipice and Persewood be added, they contain a great deal more.

beautiful ground, falling “ precipitately every way into a valley which shelves down in the middle ;” and is scattered with groups and single trees in an excellent style.

The view from the house is soft, rich, and beautifully picturesque :—the lawn and woods of Persfield and the opposite banks of the river :—the Wye, near its mouth, winding thro’ “ meadows green as emerald,” in a manner peculiarly graceful :—the Severn, here very broad, backed by the wooded and highly cultivated hills of Gloucestershire, Wiltshire, and Somersetshire. Not one *rock* enters into the composition :—The whole view consists of an elegant arrangement of lawn, wood, and water.

The upper lawn is a less beautiful ground, and the view from it, though it command the “ cultivated hills and rich vallies of Monmouthshire,” bounded by the Severn and backed by the Mendip-hills, is much inferior to that from the house.

To give variety to the views from Persfield, to disclose the native grandeur which surrounds it, and to set off its more striking features to advantage, walks have been cut through the woods and on the face of the precipice which border the grounds to the south and east. The viewer enters these walks at the lower corner of the lower lawn.

The

The first point of view is marked by an alcove, from which are seen the bridge and the town of Chepstow, with its castle situated in a remarkable manner on the very brink of a perpendicular rock, washed by the Wye: and beyond these the Severn shews a small portion of its silvery surface.

Proceeding a little farther along the walk, a view is caught which the painter might call a complete landscape: The castle with the serpentine part of the Wye below Chepstow, *intermixed* in a peculiar manner with the broad waters of the Severn, form the fore-ground; which is backed by distant hills: the rocks, crowned with wood, lying between the alcove and the castle, to the right; and Castle-hill farm, elevated upon the opposite banks of the river, to the left—form the two side-screens. This point is not marked, and must frequently be lost to the stranger.

The grotto, situated at the head of Perfe-wood, commands a near view of the opposite rocks:—magnificent beyond description! The littleness of human art was never placed in a more humiliating point of view:—the castle of Chepstow, a *noble fortress*, is, compared with these natural bulwarks, a mere *house of cards*.

Above the grotto, upon the isthmus of the Perfe-field side, is a shrubbery:—strangely misplaced! an unpardonable intrusion upon the native *grandeur* of this scene. Mr. GILPIN's observations upon this—as upon every other occasion—are very just.

He

He says, " It is pity the ingenious Embellisher of these scenes could not have been satisfied with the great beauties of nature which he commanded. The shrubberies he has introduced in this part of his improvements I fear will rather be esteemed paltry." — " It is not the shrub which offends : it is the *formal introduction* of it. Wild underwood may be an appendage of the grandest scene : it is a beautiful appendage. A bed of violets or of lillies may enamel the ground with propriety at the foot of an oak ; but if you introduce them artificially in a border, you introduce a trifling formality, and disgrace the noble object you wish to adorn." (GILPIN *on the Wye*, p. 42.)

The walk now leaves the wood and opens upon the lower lawn, until coming near the house it enters the alarming precipice facing Llancot ; winding along the face of it in a manner which does great honour to the artist. Sometimes the fragments of rock which fall in its way are avoided, at other times partially removed, so as to conduct the path along a ledge carved out of the rock ; and in one instance, a huge fragment, of a somewhat conical shape and many yards high, is perforated ; the path leading through its base. This is a thought which will hand down to future times the greatness of Mr. MORRIS's taste : the design and the execution are equally great : not a mark of a tool to be seen ; all appears perfectly natural. The arch-way is made winding, so that on the approach

proach it appears to be the mouth of a cave ; and, on a nearer view, the idea is strengthened by an allowable deception ; a black dark hole on the side next the cliff, which, seen from the entrance before the perforation is discovered, appears to be the darksome inlet into the body of the cave.

From this point, that vast inclosure of rocks and precipices which marks the peculiar magnificence of Persefield, is seen to advantage. The area, containing in this point of view the fields of Llancor and the lower margin of Perse-wood, is broken in a manner peculiarly picturesque by the graceful winding of the Wye ; here washing a low grassy shore, and there sweeping at the feet of the rocks,-- which rise in some places perpendicular from the water : but in general they have a wooded offsett at the base ; above which they rise to one, two, or perhaps three or four hundred feet high ; exposing one full face, silvered by age, and bearded with ivy, growing out of the wrinkle-like seams and fissures. If one might be allowed to compare the paltry performances of art with the magnificent works of nature, we should say, that this inclosure resembles a prodigious fortress which has lain long in ruins. It is in reality one of nature's strong-holds ; and as such has probably been frequently made use of.— Across the isthmus on the Gloucestershire-side there are the remains of a deep intrenchment, called to this day the Bulwark ; and tradition still seems with the extraordinary warlike feats that have been performed among this romantic scenery.

From

From the perforated rock, the walk leads down to the cold-bath (a complete place), seated about the mid-way of the precipice, in this part less steep: and from the cold-bath a rough path winds down to the meadow, by the side of the Wye, from whence the precipice on the Persefield-side is seen with every advantage: the giant fragments, hung with shrubs and ivy, rise in a ghastly manner from amongst the underwood, and shew themselves in all their native savageness*.

From the cold-bath upward, a coach-road (very steep and difficult) leads to the top of the cliff, at the upper corner of the upper lawn. Near the top of the road is a point which commands one of the most pleasing views of Persefield: The Wye sweeping through a grassy vale which opens to the left:—Llancot backed by its rocks, with the Severn immediately behind them; and, seen in this point of view, seems to be divided from the Wye by only a sharp ridge of rock, with a precipice on either side; and behind the Severn, the vale and wooded hills of Gloucestershire.

From this place a road leads to the top of Wind-cliff—astonishing sight! The face of nature probably affords not a more magnificent scene! Llancot in all its grandeur; the grounds of Persefield; the castle and town of Chepstow; the graceful

* There is another way down into this meadow: a kind of winding stair-case, furrowed out of the face of the precipice, behind the house, and leading down into a walk made on the side of the river; but being at present out of repair, the descent this way is rendered very difficult, and somewhat dangerous.

windings of the Wye below, and its conflux with the Severn: to the left, the forest of Dean: to the right, the rich marshes and picturesque mountains of South Wales: a broad view of the Severn, opening its sea-like mouth: the conflux of the Avon, with merchant ships at anchor in King-road, and vessels of different descriptions under sail: Aust-Cliff, and the whole vale of Berkeley, backed by the wooded swells of Gloucestershire; the view terminating in clouds of distant hills, rising one behind another, until the eye becomes unable to distinguish the earth's billowy surface from the clouds themselves*.

The leading principle of the proposed improvement would be to separate the *sublime* from the *beautiful*; so that in viewing the one, the eye might not so much as suspect that the other was near.

Let the *hanging-walk* be conducted entirely along the precipices, or through the thickets, so as to disclose the natural scenery, without once discovering the lawn or any other acquired softness. Let the path be as rude as if trodden only by wild beasts and savages, and the resting-places, if any, as rustic as possible.

Erase entirely the present shrubbery, and lay out another as elegant as nature and art could render it before the house, swelling it out into the lawn,

* The waters of the Severn and Wye, being principals in these views, and being subject to the ebbs and flowings of the tide, which at the bridge of Chepstow rises to the almost incredible height of forty or fifty feet; it follows, that the time of spring-tide and high water is the properest time for going over Perfield.
towards

towards the stables ; between which and the kitchen-garden make a narrow winding entrance.

Convert the upper lawn into a deer-paddock, suffering it to run as wild, rough, and forest-like as total negligence would render it.

The viewer would then be thus conducted : He would enter the *hanging-walk* by a sequestered path, at the lower corner of the lawn *, pursuing it thro' the wood to beneath the grotto ; and round the head-land, or winding through Perse-wood, to the perforated rock and the cold-bath, without once conceiving an idea (if possible) that art, or at least that much art, had been made use of in disclosing the natural grandeur of the surrounding objects ; which ought to appear as if they presented themselves to his view, or, at most, as if nothing was wanted but his own penetration and judgement to find them out. The walk should therefore be conducted in such a manner, that the breaks might be quite natural ; yet the points of view obvious, or requiring nothing but a block or a stone to mark them. A stranger at least wants no seat here ; he is too eager, in the early part of his walk, to think of lounging upon a bench.

From the cold-bath he would ascend the steep, near the top of which a commodious bench or benches might be placed : the fatigue of ascending the hill would require a resting-place ; and there are

* A young plantation below the entrance into the lower lawn has been placed as it were for that purpose.

few points which afford a more pleasing view than this; it is grand, without being too broad and glaring.

From these benches he would enter the *forest* part. Here the idea of Nature in her primitive state would be strengthened: the roughnesses and deer to the right, and the rocks in all their native wildness to the left. Even Llancot might be shut out from the view by the natural shrubbery of the cliff. The Lover's-Leap, however (a tremendous peep), might remain; but no benches nor other work of art should here be seen. A natural path, deviating near the brink of the precipice, would bring the viewer down to the lower corner of the park; where benches should be placed in a happy point, so as to give a full view of the rocks and native wildnesses, and, at the same time, hide the farm-houses, fields, and other acquired beauties of Llancot.

Having fatiated himself with this *savage scene*, he would be led, by a still rustic path, through the labyrinth—when the shrubbery, the lawn, with all its appendages, the graceful Wye and the broad silver Severn, would break upon the eye with every advantage of ornamented nature: the transition could not fail to strike.

From this soft scene he would be shewn to the top of Windcliff, where, in one vast view, he would unite the sublime and beautiful of Persefield.

F I N I S.

ENGLISH NAMES,

AND OTHER

NON-LINNEAN TERMS,

IN THE

ALPHABET OF PLANTS.

A.

A LMOND,	—	See	<i>Amygdalus.</i>
Angelica Tree,	—		<i>Aralia.</i>
Andrachne,	—	—	<i>Arbutus.</i>
Alder,	—	—	<i>Betula.</i>
Allspice Tree,	—		<i>Calycanthus.</i>
Alder, American,	—		<i>Clethra.</i>
Azarole,	—	—	<i>Cratægus.</i>
Aria,	—	—	<i>Cratægus.</i>
Ash,	—	—	<i>Fraxinus.</i>
Acacia, three-thorned,	—		<i>Gleditsia.</i>
Althea frutex,	—		<i>Hibiscus.</i>
Amelanchier,	—		<i>Mespilus.</i>
Aspen,	—	—	<i>Populus.</i>
Apricot,	—	—	<i>Prunus.</i>
Apple,	—	—	<i>Pyrus.</i>

Alder, berry-bearing,	—	<i>Rhamnus.</i>
Alaternus,	—	<i>Rhamnus.</i>
Ash, poison,	—	<i>Rbus.</i>
Acacia, false,	—	<i>Robinia.</i>
Aspalathus,	—	<i>Robinia.</i>
Ash, mountain,	—	<i>Sorbus.</i>
Arbor vitæ,	—	<i>Thuja.</i>
Agnus castus,	—	<i>Vitex.</i>
Azedarach,	—	<i>Melia.</i>
Arbor Judæ,	—	<i>Cercis.</i>

B.

Bean Trefoil, stinking,	—	<i>Anagyris.</i>
Berberis,	—	<i>Berberis.</i>
Birch,	—	<i>Betula.</i>
Box,	—	<i>Buxus.</i>
Button-Wood,	—	<i>Cephalanthus</i>
Bindwith,	—	<i>Clematis.</i>
Bladder Sena,	—	<i>Colutea.</i>
Bloody Twig,	—	<i>Cornus.</i>
Byzantine Nut,	—	<i>Corylus.</i>
Beech,	—	<i>Fagus.</i>
Broom,	—	<i>Genista.</i>
Buckthorn, Sea,	—	<i>Hippophae.</i>
Bay,	—	<i>Laurus.</i>
Benzoin Tree,	-	<i>Laurus.</i>
Benjamin Tree,	-	<i>Laurus.</i>
Box-thorn,	-	<i>Lycium.</i>
Bead-Tree,	-	<i>Melia.</i>
Birdcherry,	-	<i>Prunus.</i>

Bullace,

ALPHABET OF PLANTS. 629

Bullace,	-	-	-	-	<i>Prunus.</i>
Buckthorn,	-	-	-	-	<i>Rhamnus.</i>
Briar, fweet,	-	-	-	-	<i>Rosa.</i>
Bramble,	—			—	<i>Rubus.</i>
Broom, butcher's,			—		<i>Ruscus.</i>
Bindweed,	—			—	<i>Smilax.</i>
Bittersweet,		—		—	<i>Solanum.</i>
Broom,	—			—	<i>Spartium.</i>
Bladder Nut,			—		<i>Staphylea.</i>
Briony, black,		—		—	<i>Tamus.</i>

C.

Custard Apple,	-	-	-	-	<i>Annonia.</i>
Catalpa,	-	-	-	-	<i>Bignonia.</i>
Climber, Virginia,	-	-	-	-	<i>Bignonia.</i>
Climbers, Class of,	-	-	-	-	<i>Clematis.</i>
Cherry, Cornelian,	-	-	-	-	<i>Cornus.</i>
Colutea, jointed,	-	-	-	-	<i>Coronilla.</i>
Cypress,	-	-	-	-	<i>Cupressus.</i>
Cneorum,	-	-	-	-	<i>Daphne.</i>
Chamelæa,	-	-	-	-	<i>Daphne.</i>
Chestnut,	-	-	-	-	<i>Fagus.</i>
Chinquapin,	-	-	-	-	<i>Fagus.</i>
Cytisus of Montpellier,	-	-	-	-	<i>Genista.</i>
Creeper, Virginia,	-	-	-	-	<i>Hedera.</i>
Cedars, Class of,	-	-	-	-	<i>Juniperus.</i>
Savin,	-	-	-	-	<i>Juniperus.</i>
Crab,	-	-	-	-	<i>Pyrus.</i>
Cork-Tree,	-	-	-	-	<i>Quercus.</i>
Christi Thorn,	-	-	-	-	<i>Rhamnus.</i>

Chamæ-cistus,	-	-	<i>Rhododendron.</i>
Coccygia,	-	-	<i>Rhus,</i>
Caragana,	-	-	<i>Robinia.</i>
Cat-Whin,	-	-	<i>Rosa.</i>
Cæsius,	-	-	<i>Rubus.</i>
Cafine,	-	-	<i>Viburnum.</i>
Cassioberry,	-	-	<i>Viburnum.</i>
Chaste Tree,	-	-	<i>Vitex.</i>
Cytifus, prickly,	-	-	<i>Spartium.</i>
Cherry, common,	-	-	<i>Prunus.</i>
Cherry, dwarf,	-	-	<i>Lonicera.</i>
Cucumber Tree,	-	-	<i>Philadelphus.</i>
Cembro-Pine,	-	-	<i>Pinus.</i>
Cedar of Lebanon,	-	-	<i>Pinus.</i>

D.

Date Plum,	-	-	<i>Diospyros.</i>
Diervilla,	-	-	<i>Lonicera.</i>
Dog's Bane,	-	-	<i>Periploca.</i>
Dewberry,	-	-	<i>Rubus.</i>
Dogwoods, Clafs of,	-	-	<i>Cornus.</i>

E.

Esculus,	-	-	<i>Æsculus.</i>
Evonymus, bastard,	-	-	<i>Celastrus.</i>
Evonymus, Clafs of,	-	-	<i>Euonymus.</i>
Elder,	-	-	<i>Sambucus.</i>
Elm,	-	-	<i>Ulmus.</i>
Eglantine,	-	-	<i>Rosa.</i>
Elder, marsh,	-	-	<i>Viburnum.</i>

Fringe

F.

Fringe Tree,	-	-	<i>Cbionanthus.</i>
Filbert,	-	-	<i>Corylus.</i>
Firs,	-	-	<i>Pinus.</i>
Frangula,	-	-	<i>Rhamnus.</i>
Furze,	-	-	<i>Ulex.</i>
Flammula,	-	-	<i>Clematis.</i>

G.

Gale, spleenwort-leaved,	-	<i>Liquidamber.</i>
Gale, sweet,	-	<i>Myrica.</i>
Gelder Rose Spiræa,	-	<i>Spiræa.</i>
Gelder Rose Marsh Elder,	-	<i>Viburnum.</i>
Grape,	-	<i>Vitis.</i>
Gorse,	-	<i>Ulex.</i>
Glaswort,	-	<i>Salvia.</i>
Glastonbury Thorn,	-	<i>Cratægus.</i>

H.

Horse Chesnut,	-	<i>Æsculus.</i>
Honeysuckle, upright,	-	<i>Azalea.</i>
Hartwort, Ethiopian,†	-	<i>Bupleurum.</i>
Hornbeam,	-	<i>Carpinus.</i>
Hazel,	-	<i>Corylus.</i>
Hawthorn,	-	<i>Cratægus.</i>
Horse-tail,	-	<i>Ephedra.</i>
Hazel, dwarf,	-	<i>Hamamelis.</i>
Holly,	-	<i>Ilex.</i>
Hickery Nut,	-	<i>Juglans.</i>

Honeyfuckles, Clafs of,	-	<i>Lonicera.</i>
Hypoglossum,	-	<i>Ruscus.</i>
Hypericum frutex,	-	<i>Spiræa.</i>
Haw, black,	-	<i>Viburnum.</i>
Hep-Tree,	-	<i>Rosa.</i>

L

Indigo, bastard,	-	<i>Amorpha.</i>
Jasmine, Virginia,	-	<i>Bignonia.</i>
Judas Tree,	-	<i>Cercis.</i>
Ivy,	-	<i>Hedera.</i>
Jasmines, Clafs of,	-	<i>Jasminus.</i>
Jessamy,	—	<i>Jasminus.</i>
Ilex,	-	<i>Quercus.</i>
Juniper,	-	<i>Juniperus.</i>

K.

Kidneybean plant,	-	<i>Glycine.</i>
Kermes,	-	<i>Quercus.</i>

L.

Laburnum,	-	<i>Cytisus.</i>
Lucerne Tree	-	<i>Medicago.</i>
Larch,	—	<i>Pinus.</i>
Larix,	-	<i>Pinus.</i>
Laurel, Common and Portugal,	-	<i>Prunus.</i>
Laurel, American Mountain,	-	<i>Rhododendron.</i>
Laurel, Alexandrian,	-	<i>Ruscus.</i>
Lilac,	-	<i>Syringa.</i>

Lime,

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Lime,	-	-	-	<i>Tilia.</i>
Linden,	-	-	-	<i>Tilia.</i>
Laurustinus,	-	-	-	<i>Viburnum.</i>
Lote-Tree,	-	-	-	<i>Celtis.</i>

M.

Mezereon,	-	-	-	<i>Daphne.</i>
Milkvetch,	-	-	-	<i>Glycyne.</i>
Mallow, Cyrian,	-	-	-	<i>Hibiscus.</i>
Mallow-Tree,	-	-	-	<i>Lavatera.</i>
Medick-Tree,	-	-	-	<i>Medicago.</i>
Moon Trefoil,	-	-	-	<i>Medicago.</i>
Medlar,	-	-	-	<i>Mespilus.</i>
Mulberry,	-	-	-	<i>Morus.</i>
Myrtle, Candleberry,	-	-	-	<i>Myrica.</i>
Myric,	-	-	-	<i>Myrica.</i>
Mock Orange,	-	-	-	<i>Philadelphus.</i>
Mock Privet,	-	-	-	<i>Phillyrea.</i>
Mahaleb,	-	-	-	<i>Prunus.</i>
Mountain-Ash,	-	-	-	<i>Sorbus.</i>
Meally Tree,	-	-	-	<i>Viburnum.</i>
Marsh Elder,	-	-	-	<i>Viburnum.</i>
Milletoc,	-	-	-	<i>Viscum.</i>
Maples, Clafs of,	-	-	-	<i>Acer.</i>
Moon-Seed,	-	-	-	<i>Menispermum.</i>
Myrtle, Dutch,	-	-	-	<i>Myrica.</i>

Nettle

N.

Nettle-Tree,	—	<i>Celtis.</i>
Nickar-Tree,	—	<i>Guilandina.</i>
Nightshade, woody,	—	<i>Solanum.</i>

O.

Old Man's Beard,	—	<i>Clematis,</i>
Oleaster,	—	<i>Eleagnus.</i>
Olive, wild,	—	<i>Elæagnus.</i>
Orange, mock,	—	<i>Philadelphus.</i>
Oak,	—	<i>Quercus.</i>
Oak, poison,	—	<i>Rhus.</i>
Ozier,	—	<i>Salix.</i>

P.

Peach,	—	<i>Amygdalus,</i>
Papaw,	—	<i>Annona,</i>
Periploca,	—	<i>Cynanchum.</i>
Pishamin Plum,	—	<i>Diospyros.</i>
Privet,	—	<i>Ligustrum.</i>
Pyræantha,	—	<i>Mespilus.</i>
Passion-Flower,	—	<i>Passiflora.</i>
Privet, mock,	—	<i>Phillyrea,</i>
Pine,	—	<i>Pinus.</i>
Plane,	—	<i>Platanus.</i>
Poplar,	—	<i>Populus.</i>
Padus,	—	<i>Prunus.</i>
Plum,	—	<i>Prunus.</i>
Pear,	—	<i>Pyrus.</i>
Paliurus,	—	<i>Rhamnus.</i>
Perriwinkle,	—	<i>Vinca.</i>

Per-

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Pervinca,	—	<i>Vinca.</i>
Pepper Tree,	—	<i>Vitis.</i>
Pinafter,	—	<i>Pinus.</i>
Petty Whip,	—	<i>Genista.</i>

Q.

Quince, dwarf,	—	<i>Mespilus.</i>
—, bastard,	—	—.
—, common,	- -	<i>Pyrus.</i>
Quick Beam,	—	<i>Sorbus.</i>
Quicken Tree,	—	—.
Quick,	—	<i>Cratægus.</i>

R.

Red Twig,	—	<i>Ceanothus.</i>
Red Bud,	—	<i>Cercis.</i>
Rock Rose,	—	<i>Cistus.</i>
Rest Harrow, climbing,		<i>Glycine.</i>
Rest Harrow, shrubby,		<i>Ononis.</i>
Rosebay, dwarf,	—	<i>Rhododendron.</i>
Roses, Clafs of,	—	<i>Rosa.</i>
Raspberry,	—	<i>Rubus.</i>
Rqan-Tree,	—	<i>Sorbus.</i>

S.

Sycamore,		<i>Acer.</i>
Strawberry-tree,	—	<i>Arbutus.</i>
Sea-Purflain-Tree,	—	<i>Atriplex.</i>
Staff-Tree,	—	<i>Celastrus.</i>
Snow-drop-Tree,	—	<i>Cbionanthus.</i>
Sumach, myrtle-leaved,	-	<i>Coriaria.</i>
Scorpion, Sena,	—	<i>Coronilla.</i>
Service, wild,	—	<i>Cratægus.</i>

Scam-

Scammony,	—	<i>Cynanchum.</i>
Spurge Olive,	—	<i>Daphne.</i>
Spurge Laurel,	—	<i>Daphne.</i>
Spindle-Tree,	—	<i>Euonymus.</i>
Sea-Buckthorn,	—	<i>Hippophae.</i>
St. John's-Wort, Clafs of		<i>Hypericum.</i>
Saffafras,	—	<i>Laurus.</i>
St. Peter's-Wort,	—	<i>Lonicera.</i>
Service, wild,	—	<i>Sorbus.</i>
Silk, Virginia,	—	<i>Periploca.</i>
Syringa,	—	<i>Philadelphus.</i>
Sages, Clafs of,	—	<i>Phlomis.</i>
Sloe-Thorn,	- -	<i>Prunus.</i>
Sumachs, Clafs of,	- -	<i>Rhus.</i>
Sallow,	- -	<i>Salix.</i>
Stonecrop-Tree,	- -	<i>Salsola.</i>
Sarfaparilla,	- -	<i>Smilax.</i>
Sorbs, Clafs of,	- -	<i>Sorbus.</i>
Services, Clafs of,	- -	<i>Sorbus.</i>
Spiræa Frutex,	- -	<i>Spiræa.</i>
Storax-Tree,	- -	<i>Styrax.</i>
Sena, Bladder,	- -	<i>Colutea.</i>
Sena, Scorpion,	- -	<i>Coronilla.</i>
Shrubby Horfe Tail,	- -	<i>Ephædra.</i>
Snow-ball-Tree,	- -	<i>Viburnum.</i>

T.

Trumpet Flower,	—	<i>Bignonia.</i>
Tea, New-Jersey,	—	<i>Ceanothus.</i>
Traveller's Joy,	—	<i>Clematis.</i>
Thorns, Clafs of	- -	<i>Cratægus.</i>
Trefoil-Tree,	- -	<i>Cytisus.</i>
		<i>Thymelæa,</i>

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Thymelæa,	- -	<i>Daphne.</i>
Tartan-raire,	- -	<i>Daphne.</i>
Tulip-Tree, Virginia,		<i>Liriodendron.</i>
Tulip-Tree, bay leaved,		<i>Magnolia.</i>
Thorn, evergreen,	-	<i>Mespilus.</i>
Tupelo-Tree,	- -	<i>Nyssa.</i>
Turpentine-Tree,	- -	<i>Pisbacia.</i>
Thorn, black,	- -	<i>Prunus.</i>
Trefoil Shrub,	- -	<i>Ptelea.</i>
Toxicodendron,	- -	<i>Rhus.</i>
Tamarisk,	- -	<i>Tamarix.</i>
Thea, South-Sea,	-	<i>Viburnum.</i>
Toothache Tree,	-	<i>Zanthoxylum.</i>
Thorn of Christ,	-	<i>Rhamnus.</i>

V.

Virginia Jasmine,	- -	<i>Bignonia.</i>
Virginia Climber,	- -	<i>Bignonia.</i>
Virgin's Bower,	- -	<i>Clematis.</i>
Varnish Tree,	- -	<i>Rhus.</i>
Vine,	- -	<i>Vitis.</i>

U.

Umbrella-Tree,	- -	<i>Magnolia.</i>
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W.

Wormwood-Tree,	-	<i>Artemisia.</i>
Widow-wail,	- -	<i>Cneorum.</i>
White-Thorn,	- -	<i>Cratægus.</i>
White-Beam,	- -	_____.
White-Leaf,	- -	_____.
Wild Olive,	- -	<i>Elæagnus.</i>

Wood-

Wood-Waxen,	-	-	<i>Genista.</i>
Whin, petty,	-	-	_____.
Walnut,	-	-	<i>Juglans.</i>
Woodbine,	-	-	<i>Lonicera.</i>
Willow, sweet,	-	-	<i>Myrica.</i>
Winterberry,	-	-	<i>Prinos.</i>
Willows, Clafs of,	-	-	<i>Salix.</i>
Wayfaring Tree,	-	-	<i>Viburnum.</i>
Whin,	-	-	<i>Ulex.</i>

Y.

Yew,	-	-	<i>Taxus.</i>
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